DOCUMENT RESUME

ED 336 252 RC 018 356

AUTHOR Hall, Steve
TITLE Texas Hunter Education Manual.
INSTITUTION Texas State Dept. of Parks and Wildlife, Austin.
PUB DATE 89
NOTE 131p.; Supporting manufacturers and agencies were: Federal Cartridge Co., National Muzzleloading Rifle Association, National Rifle Association, National Shooting Sports Foundation, Remington-E.I. du Pont de Nemours & Co., United States Fish and Wildlife Services and Winchester-Olin Corp.
PUB TYPE Guides - Classroom Use - Instructional Materials (For Learner) (051)

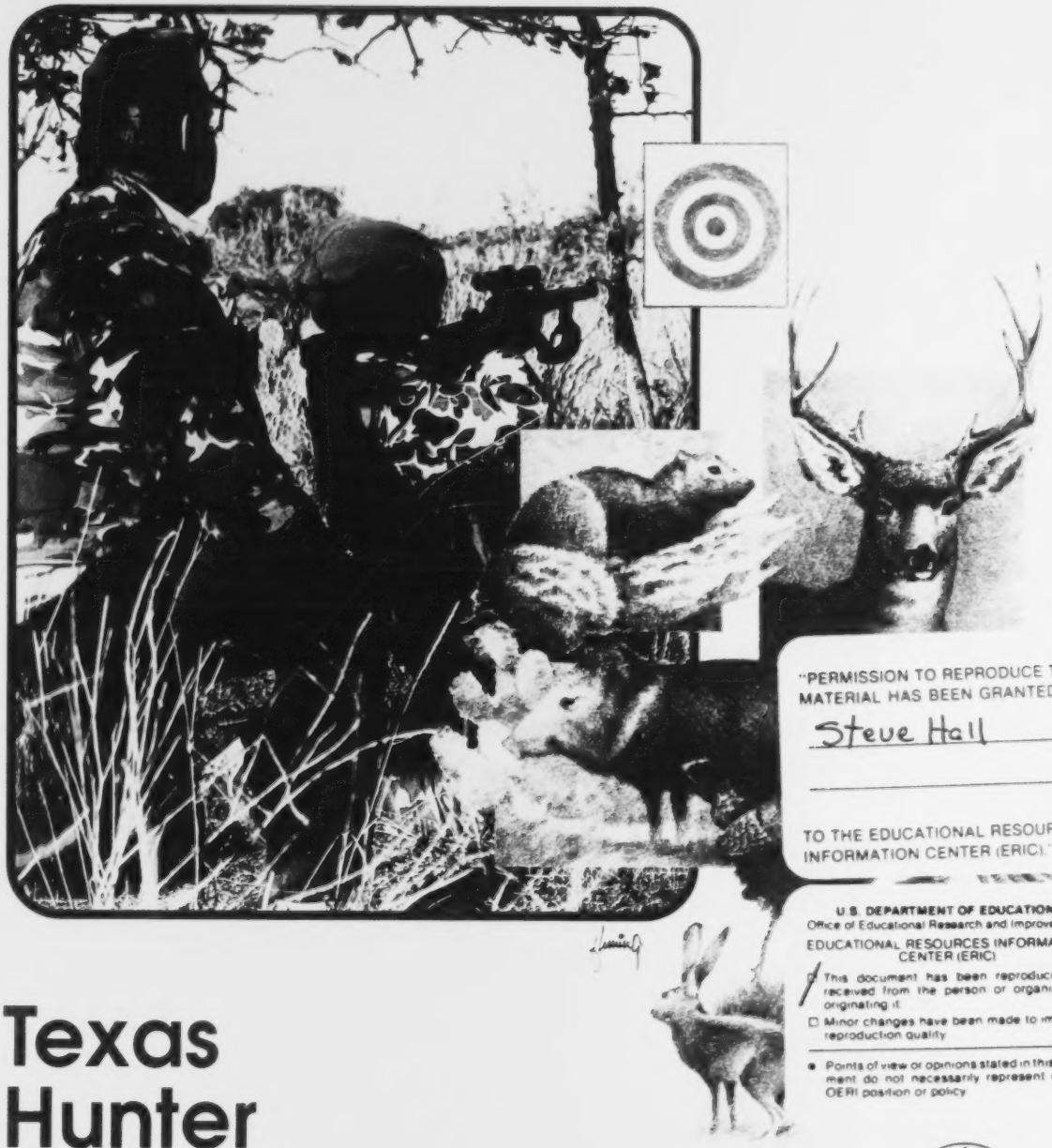
EDRS PRICE MF01/PC06 Plus Postage.
DESCRIPTORS Conservation (Environment); Ecology; Environmental Education; Ethics; First Aid; Guides; *Required Courses; *Safety; *Sportsmanship; Wildlife; *Wildlife Management
IDENTIFIERS Firearms; *Hunting; *Texas

ABSTRACT

This handbook serves as a reference for the mandatory hunter education course in Texas. The "Introduction" explains hunter education's goal to produce safe, knowledgeable, responsible, and informed hunters. It also gives information related to hunting opportunities, administration, and management. Chapter 2, "Our Hunting Heritage," gives a historical perspective on hunting and conservation, reviews the developmental phases each hunter typically experiences, and explores current and changing attitudes toward hunting and conservation. An overview of ecology and natural relationships is presented in Chapter 3, "Hunting--A Tool of Wildlife Management." Accident prevention, shooting safety, and ethics are discussed in Chapter 4, "Hunter Safety and Responsibility." Chapter 5, "Modern Firearms," reviews basics of firearm and ammunition parts and functions and presents proper handling and care of firearms. Chapter 6, "Primitive Sporting Arms" reviews basics of muzzleloading and bowhunting. First aid and emergency situations are discussed in Chapter 7, "Survival and Wilderness First Aid." The final chapter, "Basic Hunting Techniques" provides information on specific hunting preparation, planning, and techniques. It also reviews the basic steps of cleaning game. Definitions and helpful references are included at the end of each chapter. Several chapters contain written exercises. A Texas Wildlife Identification Guide is also inserted in the handbook. (KS)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED380252



"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Steve Hall

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Texas Hunter Education Manual

Revised Edition

RC018356

BEST COPY AVAILABLE

""only the hunter, imitating the perpetual alertness of the wild animal, for whom everything is danger, sees everything..""

—Jose' Ortega y Gasset
"Meditations on Hunting"
(as translated by Howard Wescott)

""A peculiar value in wildlife ethics is that the hunter ordinarily has no gallery to applaud or disapprove of his conduct. Whatever his acts, they are dictated by his own conscience, rather than by a mob of onlookers . . .""

—Aldo Leopold
"Wildlife in American Culture" in,
"A Sand County Almanac"

Dear Student:

Hunting accidents, violations and unethical behaviors continue to plague wildlife conservation efforts and tarnish the image of sport hunting.

In Texas, most hunting accidents occur as a result of poor hunter judgment, careless handling or illegal practices. Violations are primarily the result of ignorance, carelessness and apathy toward regulations adopted to protect the resource, fair chase principles and each other's personal safety.

Hunter education, started voluntarily in Texas in 1972, is a positive movement which creates a foundation promoting safe, knowledgeable, responsible and involved hunting behavior.

On June 1, 1988, mandatory hunter education was implemented, and it represents a new era of hunting in Texas. With your participation comes added awareness and responsibilities, taking the positive values and benefits of hunting into the twenty-first century.

With your help, I am confident that the heritage of hunting will continue and that future generations will be able to enjoy the same Texas traditions we've come to know.

Have a safe and rewarding experience!

Sincerely,

Andrew Sansom

Andrew Sansom
Executive Director

AS:SH:lns

ACKNOWLEDGEMENTS

This Texas Hunter Education Handbook has been designed to educate concerned adults and their families in safe and responsible hunting. Additionally, this handbook provides hunter education instructors with a reference for teaching the hunter education course. Overall, this handbook represents a tremendous amount of time dedicated by persons concerned with improving the image of hunters and general outdoor ethics, management and awareness.

Many people made contributions to this first edition of the Texas Hunter Education Handbook. The Texas Parks & Wildlife Department thanks and acknowledges the following chief contributors:

Excerpts

Written permission obtained from
Kansas Department of Wildlife and Parks
Outdoor Empire Publishing, Inc.

Mary-Love Bigony —
Texas Parks & Wildlife Department

Supporting Manufacturers and Agencies

Federal Cartridge Company, Inc.
National Muzzleloading Rifle Association
National Rifle Association
National Shooting Sports Foundation
Remington – E.I. du Pont de Nemours & Co. (Inc.)
United States Department of the Interior
(United States Fish and Wildlife Service)
Winchester–Olin Corporation

Handbook Development

Compiled & Written by:	Steve Hall	Art Director:	Pris Martin
Photography (black/white):	Leroy Williamson	Design:	Suzanne Davis
	Steve Hall	Illustrations & Graphics:	Clemente Guzman III
	Terry Erwin		Patrick Stark
Cover Photo:	Steve Hall		Rob Fleming
Typing & Typesetting:	Linda Shew	Review & Editing:	Laverne Moccia
	Suzanne Davis		Brady Mayo

All Texas Parks and Wildlife Department programs and facilities are open to the public, regardless of the individual's race, color, national origin, sex, age or handicap. Any person believing that he/she has been discriminated against should write to:

Director
Office of Equal Opportunity
U.S. Department of the Interior
Washington, D.C. 20240

Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744
Andrew Sansom, Executive Director

Copyright © 1989 by the Texas Parks and Wildlife Department. No part of the contents of this manual may be reproduced by any means without the permission and written consent of Texas Parks and Wildlife Department.

TABLE OF CONTENTS

❶ INTRODUCTION
...What is Hunter Education? 1

❷ OUR HUNTING HERITAGE
...A Move Toward Conservation 9

❸ HUNTING — A TOOL OF WILDLIFE MANAGEMENT
...The Sportsman's Role 19

❹ HUNTER SAFETY & RESPONSIBILITY
...The True Sportsman 28

❺ MODERN FIREARMS
...Understanding The Basics 39

❻ PRIMITIVE SPORTING ARMS
...Understanding The Basics 62

❼ SURVIVAL AND WILDERNESS FIRST AID
...The Total Sportsman 79

❽ BASIC HUNTING TECHNIQUES
...Putting Knowledge and Skill Into Practice 91

SPECIAL SECTION
WILDLIFE IDENTIFICATION GUIDE
...Guide to game species found in Texas (inserted)

FOREWORD

TO THE YOUNG STUDENT

By attending the TEXAS PARKS AND WILDLIFE DEPARTMENT'S HUNTER EDUCATION COURSE, you will learn the following:

—the procedures for safe hunting.

—the rules to make you a better hunter and a more responsible sportsman,

—the role of the hunter, and

—the hunter's image as viewed by both other hunters and non-hunters.

Your learning, however, will not stop here. Material presented in this program will either help you ask more questions or encourage you to learn more about hunting. Hunting is a lifetime sport, therefore, you will have the opportunity to pick up new knowledge and/or skills every time you go outdoors. Not only will your awareness for living things and nature be enhanced, but also you will be given the opportunity to have some of the same challenges and excitement experienced by your forefathers long ago. There is something about the "thrill of the chase" which will make you a part of the outdoors rather than just an onlooker.

In the hunter education course you will learn the meaning of the word **responsibility**. In hunting, to be responsible means not only being held accountable for your actions but also those of other hunters, landowners, non-hunters, the Texas Parks and Wildlife Department and other agencies responsible for managing the resources in Texas.

Most importantly, you are held accountable to yourself. As **Aldo Leopold** ("Father of Wildlife Management") stated in his writings about conservation, you have no referees in the outdoors. Most of the time you do not have spectators. Usually, **you** will be the final judge as to whether your actions are right or wrong.

This course will establish a path which will help you distinguish between right and wrong. To follow the correct path, you must practice what is right!

There will be plenty of negative influences which will try to knock you off this path. These influences may include friends, magazines, television and even your own relatives! But the *true sportsman* will stick to the correct path and turn bad influences into good ones. The true sportsman also will get back on the path when he or she stumbles or makes a mistake and show others why responsible actions are an investment in the future of hunting.

Sports teach a person sportsmanship. Lab exercises or assignments in school teach responsibility in learning. The goal of hunter education is to teach hunter safety and responsibility.

When you are not safe and/or responsible, you may:

*lose a companion,
*have an accident,
*lose the privilege of hunting on a landowner's ranch,
*have your license taken away, or worse
*kill another person.

Think of it this way: ***Safety means survival of the individual; responsibility means survival of the privilege of hunting.***

Because of previous hunters' efforts, hunting is actually a safe sport. It can be better. One near miss or ricochet is enough to make you realize how dangerous the sport can be. Always be alert. Make safety your number one concern. Develop safe habits. Insist that your companions do the same. Think about it, wouldn't you rather hunt with someone who demonstrates safe habits and who handles their sporting arm carefully and confidently?

Worry, guilt, hatred and anger may be what you will feel when you run across unsafe or irresponsible hunters or poachers. A responsible hunter will let companions know if what they are doing is wrong. If companions ignore your good advice, the responsible hunter should refuse to hunt with these persons or under these circumstances.

As a hunter education graduate, you are on your way to helping yourself and the image of sport hunting. All who care about hunting, applaud your efforts!

TO THE ADULT STUDENT

Your participation in hunter education is the key to the future of hunting. Although you may be reading this manual only because "you had to take the course" to gain the privilege of hunting, your participation will be greatly rewarded.

First, you will find out that hunter education is not just a lesson in safety. Hunter education challenges you to refresh your knowledge and skills and to ask yourself why you hunt. Exploring today's values of hunting will help you understand sport hunting and the direction in which it's heading. The course will provide you with a reason to become involved as a "giver" to the sport; not just as a "taker" of the resource.

Second, hunter education provides you with a tool to pass on the true heritage of hunting, especially for parents. As an adult, you may look for information which will help you, your children, or relatives learn more about safe and responsible hunting. This course provides information which will help you develop more effective hunting skills.

Third, hunter education is a cause. Safety tips are provided which will help you prevent accidents and teach you how to avoid them. Information on ethics will help you be the most responsible hunter you can be. Wildlife conservation information helps you understand your role as hunters and helps parents provide positive guidance to young hunters. Overall, your involvement means the survival of sport hunting. Misbehavior by you or your future generations may mean hunting's destruction. Ultimately, it will be your choice.

Whatever the choice, remember that **hunting is a privilege**. It cannot be taken for granted. It is tradition, aggression and instinct. Hunting is mystical at times. It challenges you to explore your own inner creature. It is paradox — one which allows you to admire the beauty of the creature while at the same time choosing to be its predator. It gives you a chance to escape today's pressures or just to get away. For these reasons, hunting has been and always will be a unique privilege.

However, with the privilege comes your responsibilities as adults to not only obey what is ethical and legal, but also to pass along proper values.

You play the most important role in the next generation's attitudes toward hunting. You hold the key. You are a role model. What you think is acceptable, future hunters will think is acceptable, too. If you violate safety rules or regulations, future hunters are likely to do the same thing. Society can no longer afford to pass on traditions that do not promote sound management principles or responsible hunter actions.

Wildlife management, a young science, has acknowledged mistakes of the past. For example, the tradition of shooting only bucks must change to ultimately protect the numbers of deer and the resources. Hunters must accept change by shooting does, otherwise hunting destiny may not be pleasant.

As we approach the twenty-first century, everyone needs to make a conscience effort to use the outdoors wisely. We can both enjoy nature and have fun in its resources. These are reasons why we choose to hunt. But, we need to leave the land as good or better than we found it.

The Mature Hunter acts as a positive role model by:

- Teaching younger hunters how to take care of game, game habitat, equipment, and hunting privileges.
- Demonstrating good sense and sound judgement while hunting and handling firearms.
- Acting and speaking responsibly about hunting, game management, habitat protection and wise use of resources.

If the resource is in trouble, such as waterfowl's wetlands, we need to continue to come to its aid. We may have to provide more financing and research. We may have to stop hunting altogether. Whatever the sacrifice, hunters must continue to hold the resource in highest esteem and encourage non-hunters to do the same.

If we can accomplish these goals, your adult role will mean that hunting has a promising future. Your kids and their kids can look forward to the same kind of memories we hold dear. Good luck in your efforts toward safe and responsible hunting!

1 INTRODUCTION

...What Is Hunter Education?

OBJECTIVES

- To increase your awareness of hunter education in Texas and North America.
- To give you information relative to hunting opportunities, administration and management efforts in Texas.

HUNTER EDUCATION

Hunter Education is a movement to improve **sport hunting**. The movement began with early programs in firearm and hunting safety. Today, however, the process is more than just a lesson in the "ten commandments of shooting safety." Although these safety rules are still important, hunter education covers a variety of topics valuable to both young and old hunters. The course provides a broad base on which a responsible hunter stands — one from which **you** can stand!

The main goal of hunter education is to produce safe, knowledgeable, responsible and involved hunters. Courses give beginning hunters a place to start, denying them the temptation of learning by "trial-and-error." Hunter education refreshes veteran hunters and provides them with a tool to pass on traditions and values of hunting. Overall, hunter education encourages **you** to *learn through new knowledge, new skills and new attitudes.*

Knowledge is achieved when you review, discuss and retain a basic understanding of the **why, what** and **how** of hunting. The key word is **understanding**! For example, if you do not understand the working parts of a firearm and try to unload it, you might have an accident. As a student of the hunter education course, you are given this manual to serve as a guide to knowledge. Learn the principles it has to offer. Study the information. Herein lies the strategies to help you be safe and responsible.

Skills are achieved through hands-on training such as handling, field and live-firing exercises. Skills are also achieved through continual practice. Hunting knowledge is of little value without the opportunity to put it into practice.

In the hunter education course, you may get several sessions of classroom training but may not actually get to experience or develop certain skills. Therefore, it is extremely important that you learn and practice hunting-related skills in the presence of experienced parents, relatives, friends or coaches. These can be worthwhile and rewarding experiences such as shooting clay birds on the trap range.

On the other hand, learning from another beginner or from an inexperienced hunter may result in wrong skills or bad habits.

Attitude is the most important ingredient in learning. Without the proper attitude, knowledge and skills may be used in the wrong ways. Attitudes affect everyone and are formed from within one's own moral character. They are shared with others through communications and emotions.

Hunter Education — A Lifetime Process

Good attitudes are easy to spot. They reflect courtesy, consideration, confidence, respect, cooperation, sportsmanship and involvement.

Bad attitudes are demonstrated by misconduct, cheating, stealing, disrespect, lying, ignorance, bragging and carelessness.

Attitudes cannot be taught; they are caught! They can be influenced and changed as easily as gaining a new friend. As a hunter you must try to determine what is right and what is wrong. The proper attitude will usually help you select the right choice.

Remember:
Lack of knowledge causes ignorance!
Lack of skill causes carelessness!
Lack of proper attitude causes irresponsibility!

HUNTER EDUCATION IN NORTH AMERICA

Hunter education concepts were being heard in the early 1900s. A code of outdoor ethics stressing safety, respect for others, wildlife and property rights was written in 1928 by Seth Gordon, Pennsylvania, for the Izaak Walton league.

Today, every state and Canadian province has a hunter education program, working together to standardize hunter education, reduce hunting accidents and promote values in hunting conduct and wildlife conservation.

Approximately one million students complete the hunter education course each year in the United States and almost eight million people have graduated from state programs since 1949. There are over 48,000 active hunter education instructors in the United States.

The passage of the Dingell-Hart Excise Bill on Handguns in 1970 brought money into the hunter education programs. This was followed in 1972 by the excise tax bill on archery equipment. These bills provide for the financing of hunter education, range construction and wildlife habitat restoration and supplemented the original bill — the 1937 Pittman-Robertson Act (see Section 2 — Our Hunting Heritage).

In 1972 the state hunter education coordinators organized the North American Association of Hunter Safety Coordinators (NAAHSC – renamed Hunter Education Association in 1989). The Association oversees the goals of hunter education throughout North America, making sure each state and province has met hunters' needs.

There has been a move towards hunter education for first-time hunters and those under 18 years of age. Over 40 states have mandatory laws including Texas which officially started its program on June 1, 1988 (see Hunter Education in Texas in this section).

Finally, it is the individual state's responsibility to train and certify students and instructors. The state must fulfill its role to ensure a promising future for all hunters, for the resource and for other interest groups as well. It is a tough job, but with your help, Texas will be able to enjoy the rich experiences of hunting for many years to come.

Hunter Education's History

- Early 1900's — hunter education concepts started
- 1928 — Code of outdoor ethics stressing safety, respect for outdoors, wildlife and property rights written by Seth Gordon, Pennsylvania, for the Izaak Walton league.
- 1946 — Hunter education started in Kentucky statewide youth camp program.
- 1948 — National Rifle Association (NRA) provided hunter safety course instructors until states developed their own programs.
  - Established a system of certifying rifle and pistol instructors through gun clubs.
  - Established uniform casualty report for collecting hunting accident information.
- 1949 — First mandatory hunter safety program started in New York.

STATES WITH MANDATORY HUNTER EDUCATION PROGRAMS

***As of Jan. 1990**

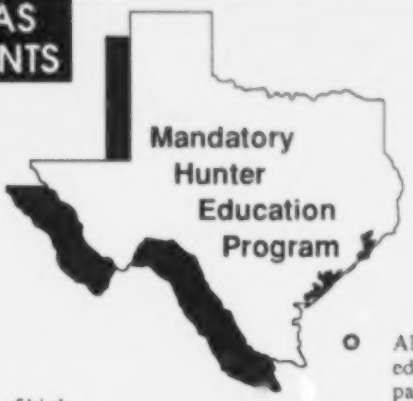
(NOTE: Before hunting, be sure to read the most current hunting regulations of that particular state.)

*Marked by year each became or becomes mandatory

Voluntary

Canada Provinces
British Columbia
Saskatchewan
Manitoba
Ontario
Nova Scotia
Quebec

HUNTER EDUCATION IN TEXAS —MANDATORY REQUIREMENTS



Who Must Attend?

Hunters whose date of birth is on or after September 2, 1971. Any individual may take the course on a voluntary basis and is encouraged to attend regardless of requirements.

When Did the Program Start?

The program started June 1, 1988.

When is Certification Required?

Effective September 1, 1989: Hunters whose date of birth is during the period September 2, 1971, through August 31, 1973, must have successfully completed the course to hunt in Texas.

Effective September 1, 1990: Hunters whose date of birth is during the period September 2, 1971, through August 31, 1974, must have successfully completed the course to hunt in Texas.

Effective September 1, 1991: Hunters whose date of birth is during the period September 2, 1971, through August 31, 1975, must have successfully completed the course to hunt in Texas.

Effective September 1, 1992: Hunters whose date of birth is during the period September 2, 1971, through August 31, 1976, must have successfully completed the course to hunt in Texas.

Effective September 1, 1993: All hunters who are at least 12 years of age, and whose date of birth is on or after September 2, 1971, must have successfully completed the course to hunt in Texas.

Who is Exempt?

- Hunters whose date of birth is on or before September 1, 1971.
- Hunters who have been certified in the voluntary Texas Hunter Safety (Education) Program.
- Hunters who have been certified through another state's resource agency.
  NOTE: Check with the Texas Parks and Wildlife Hunter Education Section (512–389-4999) to determine whether a comparable course is acceptable or not.
- Hunters under 17 years of age whose date of birth is on or after September 2, 1971, when accompanied by a licensed hunter 17 years of age or older.
  NOTE: Hunters under 12 years of age must be accompanied by a licensed hunter 17 years of age or older.
  NOTE: The word "accompanied" means within normal voice commands.

Minimum Age

Minimum age is 12 years. (Those under 12 may attend and receive recognition of attendance, but must retake the course after turning 12.)

Successful Completion

To successfully complete the course, students

- Must attend a minimum of ten hours in two or more days.
- Must be evaluated by instructor as acceptable in knowledge, skill and attitude.
- Must have a minimum 70% score on an examination prescribed by the Department.
- Certification is good for life and accepted in other states and Canadian provinces.
- All students should receive a hunter education handbook, decal and patch.
- Proof of certification is a Department-prescribed card or temporary receipt which must be carried at all times while hunting with all firearms and archery equipment.

Course Fee

The course fee is $5.00. A duplicate certification card is $2.00 and may be obtained by writing the Texas Parks and Wildlife Department (make personal checks payable to Texas Parks and Wildlife). Include name, address, phone number, date-of-birth and any other information such as the name of the instructor or location of course (if you can remember).

Volunteer Instructor's Requirements

A volunteer instructor:

- Must have successfully completed student course.
- Must complete an application and be interviewed by a Department game warden.
- Must attend a minimum eight-hour instructor training course.
  NOTE: Instructors certified in the voluntary Texas hunter (safety) education program are certified instructors for the mandatory program. Certified teachers must successfully complete a student course, complete a "mutual agreement" application and attend a minimum four-hour program orientation.

Decertification of Instructors

The Department may decertify instructors for violating provisions of these regulations, falsification of records or documents, or for actions that are detrimental to the objectives of the program.

Violation

Failure to carry proper certification while hunting constitutes a Class C, Parks and Wildlife Code Misdemeanor which is punishable by a fine not less than $25.00 nor more than $500.00.

For Information About Courses in Your Area

Call or write your local Texas Parks and Wildlife Office, or the State Headquarters at 4200 Smith School Road, Austin, Texas 78744, Attn: Hunter Education. Phone: 512–389-4999 or 1-800-792-1112.

This is a federally-assisted program. W-104-S. Federal Aid. U.S. Fish and Wildlife Service.

HUNTING IN TEXAS

Hunting in Texas is unique when compared to most states. You can go west to hunt mule deer or antelope, travel south to pursue whitewings or collared peccaries (javelinas), select a secluded Hill Country lease to harvest one of an abundant supply of white-tailed deer, travel to north Texas for an exciting bobwhite, turkey or coyote hunt, go to the East Texas Pineywoods to produce a few squirrels for the stew pot and finally, head toward the coast to try calling in ducks and geese or hauling in an alligator.

Whatever you choose to hunt, hunting responsibility remains the same. Part of those responsibilities include securing a place to hunt.

PRIVATE HUNTING OPPORTUNITIES

About 96 percent of Texas hunting lands are privately owned. Therefore, landowners play a key role in your opportunity to hunt. Texans are able to hunt on these private lands because, 1) they own the land, 2) the hunter receives permission to hunt or 3) the hunter pays for the privilege.

A **Hunting lease** is private land where a landowner provides access to hunters after certain arrangements are made. Leases are common throughout Texas. Since it may be expensive to gain such access, hunters or families typically purchase a lease together to help reduce costs. A hunting lease, however, can provide many advantages to these hunters.

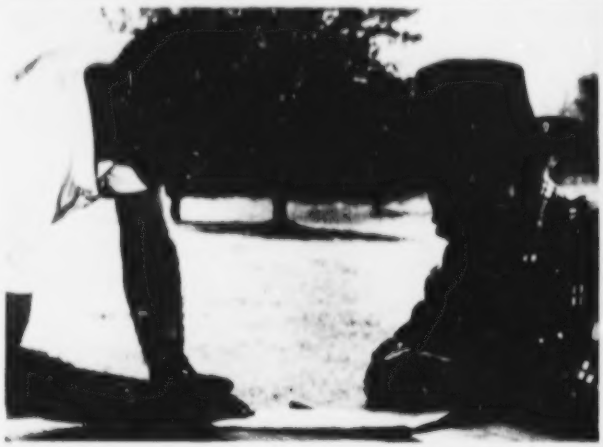
First, a hunting lease provides the chance for a family to have their own place to escape. Second, the experience of a lease can provide many quality moments. Hunters know exactly who should or will be on the lease— usually family members, close friends or companions. Third, a lease gives hunters a sense of ownership and control over when and where hunters are situated. It also allows hunters to make their own rules or standards which promote responsible actions. Finally, a lease can help form a solid bond between hunters and landowners—but only if the hunters show responsibility!

In Texas, several services help hunters find leases. One is published by the TEXAS PARKS AND WILDLIFE DEPARTMENT, called the "Deer Hunting Lease Register." A second register is published by the Soil Conservation Service. It is called the "Hunter's Clearinghouse." To order the Department's register you can call the State headquarters in Austin at 512-389-4505. For the Hunter's Clearinghouse call 512-463-7679.

An adult or family must set up lease terms with the landowner. The contract is called a **lease agreement** which is a formal document containing everything discussed and agreed upon in writing. It may be simple or complex depending on use and the type of lease. But, it should address the following items:

Lease Contract Contents:

- ✔ Type of lease, length of season
- ✔ Payment information; how much and when payments are due
- ✔ Names, addresses and phone numbers of all parties involved
- ✔ Land boundaries, descriptions, maps
- ✔ Specific services, facilities and activities allowed
- ✔ Current hunting laws, regulations and limitations
- ✔ Restrictive bag limits (other than state's), restricted activities and hunting closures
- ✔ Blinds, stands and feeding activities allowed
- ✔ Fishing restrictions or allowances
- ✔ Guests and their allowed activities
- ✔ "Hunting lease license" legal reporting system, record book
- ✔ Known risks, procedures for cancellation or forfeit
- ✔ Insurance or liabilities
- ✔ Ranching and farming operations
- ✔ Wildlife management practices
- ✔ Landowner and their guest's privileges
- ✔ Keys, combinations to locks
- ✔ Emergency procedures
- ✔ Building restrictions
- ✔ Signatures of agreeing parties



"Lease Agreement" being signed

12 BEST COPY AVAILABLE

Adults and landowners must sign and date the agreements or contracts. If everything goes well, they may renew the agreement year after year.

How To Find A Hunting Lease:

- ✔ *Plan Early* – Plan at least a year in advance
- ✔ *Set up Goals and Objectives* – What do you wish to hunt? How much are you willing to spend?
- ✔ *Research* – Find out as much information about the lease and the landowner as possible.
- ✔ *Top Five Choices* – Select your top five choices or alternatives.
- ✔ *Visit* – Arrange and visit with as many of your choices as possible.
- ✔ *Selection* – Choose the lease you most desire.
- ✔ *Agreement* – Draft an agreement as recommended above.
- ✔ *Verification* – Make sure the landowners are who they claim to be. (Some hunters are charged lease fees by crooks who are running scams.)
- ✔ *Sign and Date* – Meet with the landowner to make formal the agreement. Pay the first lease fee if appropriate.
- ✔ *Be a Responsible Hunter, Lessee* – Be prompt in your payments, courteous and capable in all of your dealings with the landowner. Follow all legal and ethical rules of leasing and hunting.

For day leases, make sure you hunt on lands or with guides who have good reputations or who come highly recommended. Make sure guides follow all legal and ethical hunting practices. As a responsible hunter, part of your role is to help clean up our sport by weeding out illegal or unethical hunters, guides and landowners.

Remember, paying for a lease does not buy you the right to be unsafe, illegal or irresponsible while hunting.

PUBLIC HUNTING OPPORTUNITIES - TEXAS

If you do not have access to private lands, you will have to find public hunting opportunities. **Public lands** are administered by the Texas Parks and Wildlife Department as well as agencies like the U.S. Forest Service, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers and the military.

State wildlife management areas are the responsibility of the Texas Parks and Wildlife Department. These lands are donated, purchased, leased or obtained through other types of mutual agreements over a certain amount of time.

Wildlife Management Areas — Public Hunting Opportunities

There are two types of management areas. One is called **Type I** and is available by registration or by special or regular permits depending on the animal hunted and the season.

The second is called **Type II** which are public lands open to hunters who have purchased an annual permit. The Type II program was started in 1987 to provide low-cost, family-oriented public hunting opportunities.

Money collected from Type I and Type II permits helps pay for wildlife-oriented projects in Texas. For information about these two programs, contact your local Texas Parks and Wildlife Department.

Other public opportunities exist primarily on lands controlled by other state or federal agencies. Outdoorsmen can contact any of the following agencies for information concerning hunting, fishing, backpacking or camping opportunities. (See references in this section to obtain address information.)

UNITED STATES FOREST SERVICE — National forests under the **United States Department of Agriculture** provide over 600,000 acres of public lands in Texas. Created under Theodore Roosevelt's presidency, national forests are managed for multiple use. National forest lands are located primarily in East Texas and include Angelina, Davy Crockett, Sabine and Sam Houston. National grasslands include Caddo and Lyndon B. Johnson near Decatur and Rita Blanca in the Panhandle region.

U.S. FISH AND WILDLIFE SERVICE — (included later in this section). National wildlife refuges include Anahuac, Aransas, Attwater Prairie Chicken, Big Boggy, Brazoria, Buffalo Lake, Hagerman, Laguna Atascosa, McFaddin, Muleshoe, Rio Grande Valley, Santa Ana, San Bernard, and Texas Point.

U.S. ARMY CORPS OF ENGINEERS — The Corps operates wildlife management programs at its lakes around the state. It is the policy of the Corps to permit hunting in accordance with local, state and federal laws. Corps lands restrict activities around dams, outlet facilities and offices. Corps lands include over 30 sites (reservoirs, holding areas and lakes). Some of the more popular areas include Sam Rayburn, Granger, Somerville, Grapevine, Waco, Whitney and Lake O' The Pines.

MILITARY HUNTING OPPORTUNITIES — Military installations in Texas own and operate lands used for hunting. Some are used primarily for those enlisted in the United States Armed Forces. However, some, like Ft. Hood near Killeen, offer public hunting opportunities at low cost.

NATIONAL PARK SERVICE — Of over 100,000 acres, approximately 27,000 acres of the National Park Service recreation areas are open for hunting. These acres are located at the Amistad and Lake Meredith recreation areas. **National Parks**, created in 1912, are closed for hunting but do give hunters other opportunities. Big Bend and Guadalupe Mountains National Parks are the primary sites. Others include national historical parks such as Lyndon B. Johnson, national preserves such as the Big Thicket and national seashores such as Padre Island.

RIVER AUTHORITIES — River authorities generally manage much of the major public river systems throughout Texas. Many fishing, boating and swimming and some hunting opportunities are available on these public waters. Hunters must remember that it is illegal to hunt from a vehicle or boat on such waters. River authorities regulate such rivers as the Colorado, Trinity, Sabine, Lavaca-Navidad and the Brazos.

TEXAS PARKS AND WILDLIFE DEPARTMENT

The **Texas Parks and Wildlife Department** was created by merging the **State Parks Board** and the **Game and Fish Commission** in 1963. Although young in its current structure, its conservation functions go back more than 100 years.

The Department's mission is to preserve, conserve and protect the State's unequaled natural resources and to maximize man's opportunities to enjoy them.

The department is headed a by nine-member **commission** appointed by the governor. This commission has **regulatory** authority for implementing game and fish laws, establishes broad policy and oversees the department's operation, and appoints the director, who is responsible for the administration, operation, and planning functions of the department.

Over the years, the department has evolved into **eight divisions: Resource Protection, Public Lands, Wildlife, Fisheries, Law Enforcement, Legal Services, Human Resources, and Conservation Communications.**

Outdoor resources have a proud heritage in our state. The public demands that it be protected for wise use. The department, aided by thousands of citizens, pledges to continue its duties to you and to the many resources of the state.

Overview of the Eight Divisions

Resource Protection protects the state's fish, wildlife and endangered plant resources by monitoring water quality standards, instream flows, freshwater inflows to bays, and maintenance of fish and wildlife habitats affected by large public or private developments.

Hunter purchasing license and stamps

Public Lands is responsible for managing the day-to-day activities of the State Park System and public access to wildlife management areas.

Wildlife is responsible for managing the State's wildlife resources through research, technical guidance and development.

Fisheries is responsible for managing Texas marine resources, culturing fish for stocking Texas reservoirs and bays, performing aquatic weed control, and researching and developing sport fishing management techniques.

Law Enforcement is responsible for enforcing laws in the **Parks and Wildlife Code** and for protecting the natural resources of Texas (See Texas Game Wardens - next section).

Legal Services is responsible for providing legal expertise in the areas of permits, rule making, contracts, easements, and natural resource protection.

Human Resources is responsible for the personnel, benefits, employee relations, recruiting, and staff development functions.

Conservation Communications is responsible for a comprehensive information and education program designed to increase the public's active participation in and support of natural resource conservation. This program includes the ***Texas Parks & Wildlife*** magazine, the **Made In Texas** television series, and conservation, hunter, and boating education.

TEXAS GAME WARDENS

Game wardens are "officers of the outdoors." Unlike city police, game wardens do most of their work outside of towns and cities. But like city police, they help protect you and the things which surround you. Game wardens often are called upon to tell you about their jobs, wildlife and the Texas outdoors.

Since there are laws and game wardens to enforce them, wildlife and nature have a fighting chance. But there are still people who steal from nature. They are called **poachers**. They make a game warden's job dangerous.

Poaching takes away your opportunity to see or take fish, wildlife and plants legally. Because poachers are the same as burglars or crooks they give hunting and fishing a bad name.

Another problem for the warden is the person who really is not a crook, but takes something because it is easy or because a friend or relative talks him or her into it.

In hunting, this person is one who either does not know something is wrong or is an opportunist. If the situation is right, an opportunist is a hunter who takes "just one animal" illegally or thinks it does not matter if the law is violated just one time.

There are right ways of dealing with laws if you disagree with them. Breaking the law is not right. You will find that most laws are intended for your benefit when you know the reason behind them. Ask a game warden to tell you why a law is needed. A true sportsman learns to ask questions when doubts exist.

Texas Parks & Wildlife Game Warden

OPERATION GAME THIEF

Operation Game Thief provides a way for you to turn in poachers. It gives you a chance to be involved. It gives wildlife and hunting a future because all citizens are working together for what is fair. Turn in the thieves. They are not helping your concerned efforts for a respected outdoor sport.

Let's assume you have witnessed "spotlighters." These are night poachers who shoot deer by shining a light at them. The light "freezes" the deer, giving the poacher a chance to spot its eyes and shoot it.

STEPS FOR REPORTING POACHERS

1. GATHER INFORMATION QUICKLY & COMPLETELY
   a. License plate number, vehicle
   b. Number of poachers
   c. Identification of each poacher
   d. Time, date, location
   e. Number of shots taken
   f. Weather conditions
2. STAY SAFE: Do not approach poachers or put your life in danger.
3. Telephone 1-800-792-GAME, night or day. Call as soon as you can after seeing an offense.

The information you give may lead to the arrest of these poachers. If it does, you may receive a monetary (money) reward. You are also helping the future of hunting.

U.S. FISH & WILDLIFE SERVICE

The U.S. Fish and Wildlife Service is responsible for this nation's fish and wildlife resources. The agency is headed up by the **U.S. Department of the Interior**.

While states have every opportunity to manage their own resources, the Fish and Wildlife Service must look out for interests of all U.S. citizens. They must make laws which protect federally protected resources or fish and wildlife common to several states. One such resource includes the migratory animals such as waterfowl or marine animals.

Federal wardens work with state game wardens to ensure all federal laws are observed. Recently, in Texas, coastal waterfowl guides and poachers were charged with many violations as a result of undercover work by federal wardens. Illegal baiting, bagging over the limit, "party" hunting and shooting protected species were some of the charges. It hurts the image of sport hunters nationwide when such actions occur. This is why it is important to report illegal actions and question those acting irresponsibly.

The conservation movement (see Section 2) helped to pass federal acts which the federal wardens enforce. The acts are designed to provide a promising future for wildlife which migrate through and live in the United States.

SUPPORTING ORGANIZATIONS

Texas has many organizations which help promote wildlife resources and hunting as a respected tool of wildlife management. These organizations have goals which conserve and protect the interests and values of certain groups of citizens.

Examples of such organizations include: **Sportsmen Conservationists of Texas** (SCOT); **National Wildlife Federation**, and **Texas Wildlife Foundation**; **Texas State Rifle Association**, **Ducks Unlimited**, **Texas Wild Turkey Federation** and **Quail Unlimited**. Each has goals associated with the right to own firearms, protection of habitat, and responsible shooting or hunting practices.

Still, others such as **Boy Scouts of America**, Texas **4-H Shooting Sports** and **Field and Stream** projects, **Texas Game Warden Association** and **Operation Orphans** promote behavioral development in youth such as leadership, sportsmanship and responsibility. They also provide opportunities to those who might not otherwise have the chance to visit and enjoy the Texas outdoors.

Finally, some organizations work for conservation, information, education, and funding. They include the **Safari Club**, **Texas Wildlife Association**, **Game Conservation International** and the **Audubon Society**.

Organizations

Boy Scouts of American—P.O. Box 152079, Irving, TX 75015-2079
Duck's Unlimited, Inc.—(National) - One Waterfowl Way, Long Grove, IL 60047
Game Conservation International—P.O. Box 17444, San Antonio, TX 78217
National Audubon Society—950 3rd Ave., New York, NY 10022
National Wild Turkey Federation, Inc.—Wild Turkey Bldg., P.O. Box 530, Edgefield, SC 29824
National Wildlife Federation—1400 16th St. N.W., Washington D.C. 20036-2266
Operations Orphans, Inc.—Camp Gene Ashby, P.O. Box 535, Mason, TX 76856
Quail Unlimited, Inc.—(National) - P.O. Box 10041, Augusta, GA 30903
Safari Club International—4800 W. Gates Pass Rd., Tucson, AZ 85745
Sportsmen Conservationists of Texas—807 Brazos, Suite 311, Austin, TX 78701
Texas 4-H—Texas Agriculture Extension Service, Texas A&M Univ., College Station, TX 77843
Texas Game Warden Association—P.O. Box 15226, Austin, TX 78761
Texas State Rifle Association— P.O. Box 810809, Dallas, TX 75381
Texas Wildlife Association—1635 N.E. Loop 410, Suite 108, San Antonio, TX 78209

DEFINITIONS

HUNTER EDUCATION—movement to improve sport hunting.
SPORT HUNTING — the legal pursuit and harvest of game animals.
KNOWLEDGE, SKILL AND ATTITUDE — ingredients in learning.
LEASE AGREEMENT — formal document stating the how, when, where, who and how much it will cost hunter(s) to hunt on a landowner's private land.
TYPE I AND II WILDLIFE MANAGEMENT AREAS — public hunting and research lands administered by Texas Parks and Wildlife Department.
TEXAS PARKS AND WILDLIFE DEPARTMENT (TPWD) — state's outdoor resources managing agency.
COMMISSION — oversees TPWD's activities and adopts regulations.
REGULATORY—authority for TPWD to make regulations by following Parks and Wildlife Code (state laws).
POACHERS — people who take wildlife illegally.
OPERATION GAME THIEF — system in which citizens can turn in poachers.

CHALLENGE — Your challenge has already started. By attending this hunter education course you are expressing a certain amount of willingness to be safe and responsible. However, your greatest challenge is to put into practice the knowledge gained from this course. Learn all that you can about hunting and the agencies which manage outdoor resources.

ASSIGNMENT — Write the Texas Parks and Wildlife Department or obtain literature from the instructor which will further your understanding about hunter education, hunting opportunities and wildlife agencies.

HELPFUL REFERENCES

Texas Hunter Education Program — brochure available from the Texas Parks and Wildlife Department (TPWD).
History of the Hunter Safety Movement in North America — brochure available from the Hunter Education Association or from TPWD.
Hunter Education Association — National Hunter Education Organization; brochure available from TPWD.
Hunter Education Requirements (other states) — copy available from TPWD.
TYPE I Management Areas — booklet available from TPWD.
TYPE II Management Areas — booklet available from TPWD (with purchase of permit).
Hunting Lease Registry — copy of state's sections available from TPWD.
Hunter's Clearinghouse — Soil Conservation Service, U.S. Dept. of Agriculture, P.O. Box 12847, Austin, TX 78711.
Operation Game Thief — Brochures, stickers, license envelopes available from TPWD.
Serving Texas — booklet about TPWD's organizational structure and responsibilities; available from TPWD.
Acres for the Asking — copy gives references and addresses to Texas public land agencies; available from TPWD.
Texas Hunting and Fishing on National Wildlife Refuges — brochure available from U.S. Fish and Wildlife Service, addresses of managers in "Acres for the Asking."
Hunting and Fishing (U.S. Army Corps of Engineers) — booklet available from U.S. Army Corps of Engineers, 1114 Commerce St., Dallas, TX 75242-0216.

2 OUR HUNTING HERITAGE

...A Move Toward Conservation

OBJECTIVES

- To give you a historical perspective on hunting, conservation and early wildlife management practices.
- To review traditions and values of hunting and the phases each hunter typically goes through.
- To explore current attitudes and recreational figures associated with hunting and conservation and where hunting might be headed.

HISTORY OF HUNTERS

What makes humans so superior, especially to other animals? We walk erect, make tools, share food and communicate verbally. We have well-developed brains. We enjoy socializing, and enjoy leisure and nature. We like to compete and can be aggressive at times. We also show many kinds of emotion.

You might be surprised to know that many of these traits are part of us now because our earliest ancestors were hunters,

gatherers and even **scavengers**. For hundreds of thousands of years, man has hunted in order to survive.

Man, the **predator**, is actually a true **omnivore**. We can eat and digest everything from lettuce to flesh. As a hunter, man learned to chase animals, run, jump, crawl, throw and carry heavy loads.

Hunting increased man's thinking and communications. Man developed signals and gestures which helped him trap, surround and kill animals. These were the earliest forms of spoken language.

Diets, physical make-up, division of labor between men and women, the use of fire and the formation of families all can be related to early hunting efforts. Man soon learned how to tame wild animals and plant wild seeds.

Clans of humans developed. Some tribes were **nomadic** searching for new sources of food, shelter and water. For example, some tribes of American Indians depended so much on the buffalo for food that they had to move when the buffalo moved. Once in a suitable location, they sent out hunting parties to bring back animal harvests.

Agriculture soon replaced hunting as a standard way of life. Raising and harvesting plants led to **civilization** which allowed human populations to expand. But hunting continued to hold its place and still does today.

In the modern era, hunting is considered a sport. Many popular sports were invented or formalized in the 1800s. Among these sports were exercises using hunting skills such as aiming or chasing. Today's Olympians still compete in archery, shooting and running events.

Currently, the sports of hunting and fishing are enjoyed by over 60 million Americans. But, Americans no longer need the products of these sports to survive. **Technology** has allowed us to harvest animals by more economical means. It even delivers our foods in many shapes, forms or packages.

So why does modern man continue to hunt? The following sections may help you determine why you hunt. However, many of us cannot put into words the reasons. It might have something to do with the feelings we have the instant the trigger is pulled or arrow launched. One feeling causes us to hold a certain beauty towards the animal we intend to take. Another causes us to play the aggressive predator. And still, another feeling allows us to have a certain sadness after we killed.

Explore these feelings. They are all part of hunting. They direct your excitement as you, like your forefathers, go in search of game.

"When you are fed up with the troublesome present, with being very 20th-century; you take your gun and whistle for your dog. (You) go out to the mountain, and without further ado, give yourself the pleasure during a few hours or a few days of being ***Paleolithic****."*

— Ortega y Gasset
"Meditations on Hunting"
(as translated by Howard Wescott)

CONSERVATION— A LOOK BACK

Conservation is planned **management** of a **natural resource** so as not to lose, destroy or ignore it. Aldo Leopold called conservation a state of harmony between man and land. Basically, conservation means "wise use" and management of the available resources.

Preservation means protecting or saving a resource. Both preservation and conservation are needed in order for managers to protect the resource while people use the resource.

Ancient people did not know these terms, but some practiced them. However, early conservation efforts and management were involved mainly with social orders or superstitions. Superstitions, religion or taboos, probably created the first laws protecting wildlife.

The Laws of God (Deuteronomy 22:6) declared that no one take (or kill) a bird on its nest.

Marco Polo described a hunting preserve belonging to Kubla Kahn on which keepers protected game and planted food. Kahn also prohibited killing of many animals between March and October creating the first known closed hunting season.

In Europe, game parks were part of every baron's estate. King Henry IV of England declared closed seasons on red deer and stags of hart (over five years old). King Henry VIII set a closed season on waterfowl between May 31 and August 31. During his reign certain animals were declared as "vermin," which could be killed at any time. Such animals had a **bounty** because of the destruction they caused livestock or crops. During the 1600s, King James I established an early "no trespassing" law for game protection.

Many European practices were brought to America upon its discovery. The United States followed a certain conservation movement based on the attitudes and practices of its people. They can be summarized into specific eras:

ERA OF ABUNDANCE - (1600-1849). Unlike the French in Canada who adapted to wilderness, early English settlers replaced wilderness with farms and villages. They cleared land for cattle and sheep. Laws made livestock predators such as timber wolves subject to bounties.

As early as 1639, Rhode Island colonies made it illegal to kill deer between May 1 and November 1. Towns appointed "deer reeves" or "informers of the deer," who were some of the earliest game wardens. Through the Civil War few laws existed for wildlife protection, but states did own wildlife "in trust" for the people.

ERA OF EXPLOITATION - (1850-1899). Following the Civil War, market hunting reached an historical peak. Europeans and their descendants settled across America, building railroads, fences and settlements. Wildlife was valuable in the marketplace.

Species such as the passenger pigeon, American buffalo (bison) and the egret suffered great losses in number. Up to this point in time, the buffalo had numbered perhaps sixty million.

Market hunters slaughtered millions sometimes taking only tongues or hides. One hunter took 1,500 in one week. In the 1870s, a railroad from Kansas hauled over 1,250,000 hides to Eastern tanneries. The government did not do anything to prevent the loss. They actually encouraged it as part of a bitter war against the plains Indians.

MILESTONES ENDING EXPLOITATION

United States

1872—Yellowstone National Park created
1895—North Dakota required hunters to buy licenses.

Texas

1861—Galveston Island game law instituting a two-year closed season on quail.
1885—Wild buffalo disappeared from Texas grasslands.
1890—Last grizzly bear killed in Davis Mountains.
1895—Texas Fish and Oyster Commission established.

ERA OF PROTECTION - (1900-1935) A landmark in conservation was reached in 1900 when Congress passed a law prohibiting the shipment of wild game across state lines. It also established a biological survey as an enforcement agency. It was, however, the **Lacey Act** which spelled the decline of market hunting and feather trades.

In 1901, Theodore Roosevelt became president. The conservation movement in the United States gathered momentum with Roosevelt in charge. In the late 1800s, Roosevelt and others organized the **Boone and Crockett Club** for American riflemen concerned about saving big game, public lands and forest resources. During his presidency, Roosevelt made the biological survey a bureau in 1904. He created 51 refuges and doubled the National Forest Reservation to 148 million acres. He created three movements which were to become national parks.

Other significant acts early in the 1900s were the Migratory Bird Conservation Act (1929) and the Migratory Bird Hunting Stamp Act (1934). The latter provided funds to purchase waterfowl nesting areas.

In Texas, certain management efforts took place:

1903—Season closed on pronghorn antelope, headlight hunting outlawed, bag limits established
1907—Game Department added to Fish and Oyster Commission
1909—First hunting license law
1919—Six game wardens in entire state
1928—80 game wardens
1930—First known release of "exotics"—nilgai antelope from India

ERA OF HABITAT AND HARVEST - (1935-1965). Aldo Leopold came of age early in this era. His writings about conservation are documented in such books as A Sand County Almanac and Round River. Because of his impact, he is known as "Father of Ecology, Wildlife Management and the American Land Ethics." In 1933, he became the nation's first professor of game management.

HABITAT AND HARVEST MILESTONES

United States

1935—Cartoonist "Ding" Darling, Iowa, influenced the start of wildlife research at land grant colleges nationwide. In Texas, it is located at Texas A&M University.
1936—U.S. Fish and Wildlife Service formed.
1937—Pittman-Robertson Federal Aid Restoration Act passed to produce funds for wildlife management work (see Funding in this section).
1950—Dingell-Johnson Act passed to produce funds for fisheries management work.

Other acts passed during this era produced more funding for conservation efforts.

Texas

1939—Pronghorn antelope trapping and restocking began in Texas.
1946—First game warden school started.
1953—First legal antlerless deer harvest set up in three counties. Texas had 187 game wardens statewide.
1954—First public hunt held on the Kerr Wildlife Management Area.
1950's—Hunting and fishing started increasing plus number of license sales began increasing.
1963—State Parks Board and the Game and Fish Commission merged to form the Texas Parks and Wildlife Department.

ERA OF ENVIRONMENTAL AND PEOPLE MANAGEMENT - (1966-PRESENT). Since the 1960s, wildlife management has become a science of populations, habitat and the way people use the outdoors and wildlife.

The 60s produced an environmental movement concerned with how technology affects wildlife and resources. Even though hunting and fishing grew in popularity, they became more regulated.

ENVIRONMENTAL AWARENESS ERA

United States

1966—Endangered Species Act authorized listing native endangered species; limited importation of foreign endangered species.
1969—National Environmental Protection Act passed; required Environmental Impact Statements.
1970—Environmental Protection Agency founded.
1973—Endangered Species Act gave federal protection to endangered species.

Texas

1983 - Wildlife Conservation Act gave the Texas Parks and Wildlife Commission authority to regulate wildlife resources in all Texas counties, thereby permitting statewide wildlife management.

See Texas Parks and Wildlife "Conservation Chronicle" for further Texas Conservation information.

CONSERVATION FUNDING

Conservation funding has been provided mainly through legislation and by sportsmen.

A few far-sighted conservationists and leaders organized sportsmen while firearm and ammunition industries joined efforts with early state wildlife agencies. They urged Congress to extend a law which provided a 10 percent excise tax on sporting arms and ammunition.

The result was called the **Federal Aid in Wildlife Restoration Act** sponsored by Senator Key Pittman, Nevada, and Congressman A. Willis Robertson, Virginia. Franklin D. Roosevelt signed the bill into law on September 2, 1937. In 1941, the tax was raised to 11 percent. The act is more popularly named **Pittman-Robertson (P/R) Act**.

The tax is collected by the manufacturers and deposited into U.S. Treasury's Trust Fund Branch. From there the funds are distributed by the Secretary of Interior (U.S. Fish and Wildlife Service) to the states, territories and commonwealths.

In 1970 a ten percent tax was added to handguns and in 1972 an 11 percent tax to archery equipment.

Hunter education funds were taken from one-half of the taxes collected on handguns and archery equipment and distributed to states based on the population of each state. This taxation accounts for about nine percent of total P/R funds. About 13 percent of the funds are used to purchase lands for wildlife habitat and recreational use. About 25 percent is used for research or surveys into problems affecting wildlife populations. About 50 percent is used to develop, maintain and operate wildlife management areas. The remaining three percent is used by the U.S. Fish and Wildlife Service to administer the program.

THE "UN-ENDANGERED" SPECIES

With conservation and funding successes, wildlife management practices helped certain species rebound from very low numbers around the turn of the century. These **"un-endangered" species** spell the success of wildlife management in North America. They also let the general public know that hunting is a viable tool of wildlife management. This is because many of the species which are un-endangered are game species.

White-tailed deer — Westward expansion brought grazing, logging and farming practices which altered much of the white-tailed deer habitat. Venison and deer hides were popular products in early marketplaces.

By the turn of the century, white-tailed deer numbers were as low as 500,000. Through funding, agriculture, disease prevention, rebuilding and protection of habitat, stocking and hunting, white-tailed deer have bounced back. In Texas, alone, there are as many white-tailed deer harvested each year as there were whitetails in 1920 in the United States.

Today, the U.S. total number of white-tailed deer reach well over 14 million. Texas populations are about four million. White-tailed deer is the number one big game species in North America.

Elk—Like the buffalo, early market hunting forced the decline of these grassland animals. By 1900, elk numbers were as low as 40,000 with the largest concentration around the protected Yellowstone National Park, Wyoming. Today, U.S. elk number about 500,000 because of wildlife management efforts.

Wood Duck—Wood ducks had declined to such low numbers that extinction was feared. Because of significant waterfowl efforts and funding laws, these ducks made a terrific comeback.

Volunteer groups and organizations like Duck's Unlimited have put up thousands of wood duck nest boxes to replace the once abundant older trees with nesting cavities.

In Texas, volunteers, corporate tree companies, the Waterfowl Habitat Alliance of Texas and the Texas Parks and Wildlife Department have teamed up to make and place wood duck boxes.

Other species such as beaver, pronghorn antelope, Canada geese and wild turkey have benefitted from Texas' management and conservation efforts. Some 10,000 beavers were reintroduced and restocked into suitable habitat. Now, they are found in all states. Pronghorn antelope once numbered 25,000. Today they number more than 750,000. Canada geese populations were around 1.1 million before restocking and management. Now, there are about 2.3 million.

HUNTING TRADITIONS AND VALUES

Texas traditions and values are unique, abundant and widespread. Texas has lots of land, different types of people and a variety of wildlife. It offers something for every type of hunter.

Many cultural influences settled in Texas, bringing with them such differences as food preparation. Everything from good Texas bar-b-que to spicy Cajun food dresses the menus. Can you imagine such influences when it comes to preparing wild **venison**?

Texas tradition also was built on land, ranches and oil. These brought destruction to wildlife habitat and more settlers to Texas.

Land was plenty and habitat was choice for raising stock such as goat, sheep and cattle. Fences went up, deeds were drawn. Texas soon became a land of large ranches. Many of the hunting leases today are based on some of these original land traditions and practices.

Ranches brought generations of families who passed on certain traditions. Some traditions involved **market hunting** of wildlife. These folks found ways to harvest hundreds of species of wildlife at one time. Or, they shot everything they saw because it meant money at the marketplace or to use as food to support the family.

This particular tradition is gone, but some of the attitudes about shooting everything still exist. One such attitude is shown by poachers. **Poaching** is taking wildlife illegally. Some families continue to pass on this tradition because it means big money or it provides some people with "cheap" thrills. However, market hunting and poaching are damaging to today's approach of wildlife management. Poachers also hurt the image of the legal sport hunters.

Good traditions being passed on today far outweigh the negatives. One such tradition is family spirit. Many of us are given the opportunity to join our parents hunting just as Indian braves joined the ranks of the hunters. The family camp-out or hunting trip has become the most memorable of adventures. True bonds with family, friends and even dogs are formed through enjoyment of the outdoors. These bonds hold the keys to true hunting values.

Losing these traditions would mean loss of **heritage**, and loss of the instinct. It would mean losing the moments our forefathers once had. Losing such values would leave us with a certain emptiness. Fortunately, there are many benefits of hunting which can be summed up as follows:

Economic—Wildlife is a "cash crop" for Texas landowners. Hunting provides an economic base for many rural towns in Texas.

Aesthetic—Aesthetic values relate to beauty and appreciation. Wildlife is considered a natural wonder to people. Wildlife observation is the number one outdoor retreat. Hunting and the taking of wildlife provide cultural foods and products. Taxidermy allows us to admire animals long after natural or hunted deaths take place.

Recreation—Hunting offers physical exercise, excitement, fun, companionship and a chance to escape. Millions of hours of recreation are spent by Texas hunters each year.

Ecological—Hunting is an organized form of predation. Man is atop the biological food chain. Although hunting methods and ease have changed over the years, most ecological relationships have not. Hunting is a part of the basic principles of ecology.

Hunting Value to "Hill Country" Towns

Management—As you will read in section III, hunting is a primary tool of wildlife management. Hunters provide an alternative wildlife management technique for biologists so the resource is not permanently damaged. Pest species, exotics and dangerous animals can be removed by hunters where man and wildlife have conflicts.

TODAY'S HUNTER

The modern Texas hunter is fairly unique. A Texas A&M University study in 1982 showed us what the average Texas hunter might look like. Realize that it would be difficult to find this person, but it does represent averages based on different categories.

AVERAGE TEXAS HUNTER

- Began hunting before age 15
- Father introduced youngster to hunting
- Has hunted for about 26 years
- Likely to hunt free on lands owned by friend or relative
- If leased, it would be a seasonal lease
- Lease equipped with roads, hunting blinds
- Hunter preferred that landowner provide cabin
- Owned boat and pick-up camper
- Not a member of a sportsman's club
- Seldom hunted outside of Texas
- Preferred to hunt with one to three companions
- Hunters stayed in cabin or campsite, cooked for themselves
- Hunted deer and dove
- Hunted in South Texas or Edwards Plateau (central)
- Had generally higher educational levels than hunters in other states
- Had more white-collar jobs than hunters in other states
- Paid higher salaries than hunters in other states
- Felt landowner facilities were too expensive
- Felt not enough attention paid to wildlife biologists

According to the 1985 National Survey of Fishing, Hunting and Wildlife Associated Recreation, Texans 16 years of age or older spent over 25 million days hunting. Each hunter averaged over 17 days of hunting. The total amount of money spent by hunters was more than one billion dollars. Approximately 95 percent of hunters in Texas are residents.

These statistics not only point out the economic and recreational value of hunting in Texas, but they point out more about the traditions and attitudes of Texas hunters.

HUNTING PHASES

According to Robert Jackson and Robert Norton in a Wisconsin study of 600 waterfowl hunters and contacts with more than 1,000 deer-gun hunters, there is a certain amount of change in hunters as they have more experience in the outdoors. Their results showed that these changes take place in five phases. Each stage represents the type of satisfaction a hunter experienced.

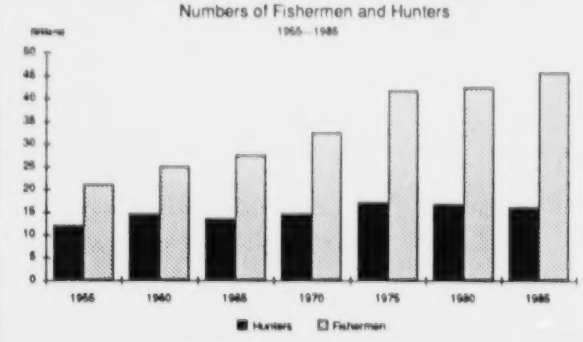
Phase I - Shooter Stage

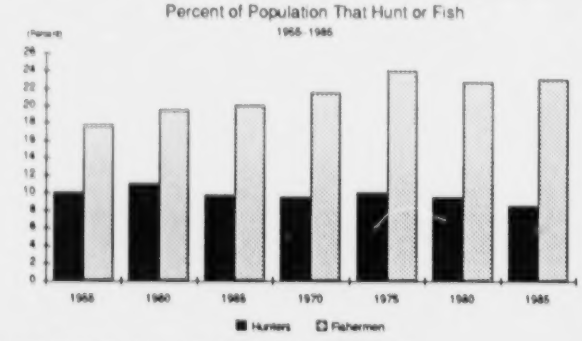
Description—The hunter in this stage talked about the satisfaction of just getting shots. This hunter was usually young or a first-time hunter. Many shooting opportunities provided much enjoyment. Missing a shot was not such a bad thing compared to testing the capability of the sporting arm.

Shooter

Limiting-Out Phase

Problem—The potential problem with this phase is the lack of knowledge and skills and the strong desire to shoot. If the beginning hunter's desire to shoot is stronger than the awareness of basic safety practices, the result can be dangerous. If you are at this stage (as with any stage), concentrate on where your muzzle is pointed **at all times**. Be sure of your target and backstop or background. Know where your safe zone-of-fire stops (see section 4 of this manual for rules of firearm and hunting safety).





(source: 1985 National Survey of Fishing, Hunting, and Wildlife-Associated Recreation, USFWS)

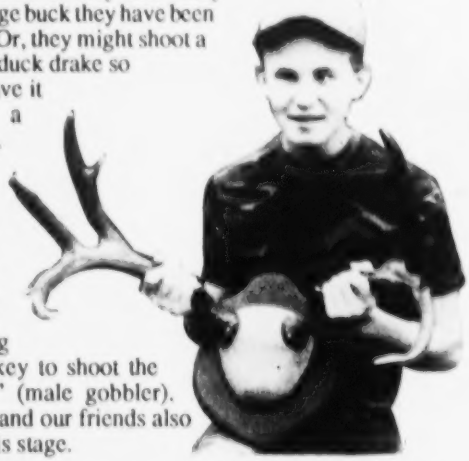
Phase II - Limiting-Out Stage

Description—Hunters at this stage are particularly happy if they are successful and shoot their limit. A limit is the number of animals of a certain species which can be legally taken such as 12 doves or three ducks. This is the stage which our families and friends play a big part. Isn't the first question you hear upon returning from a hunt, "How many did you catch or kill?" (The non-hunter typically uses the 'catch' term). Hunters at this stage are concerned with "filling up the freezer" so they have plenty of good eating for days to come. They are usually disappointed if they miss their shots.

Problem—The potential problem with this phase is attitude. If hunters let their emotions take over, they could be a hazard. If the desire to bag their game is too strong, they might forget basic safety rules or common courtesy. The "game hog" is the person, specifically at this stage, who is overly concerned about getting a limit and bragging about it later. The game hog forgets about common courtesy and may shoot other hunters' game illegally, for them. Responsible hunters would do well to refuse to hunt with such persons or help them correct their behavior.

Phase III - Trophy or Selective Stage

Description—At this stage, hunters express satisfaction if they kill "muy grande," that large buck they have been after for years. Or, they might shoot a beautiful wood duck drake so that they can have it mounted by a taxidermist. They might wait on many shooting opportunities so they can shoot the big one. They may pass up the young jake (male) turkey to shoot the old boss "tom" (male gobbler). Society, family and our friends also play a role at this stage.



The second question you hear when you get home is, "How big was it?" "Big buck" or "longest beard" contests are held around the state rewarding that one hunter who harvests a true trophy. Record books are kept nationally which also honor hunters for their trophies.

Problem—The real problems at this stage involve money and ego. If the reward or value of a certain trophy is so great, it tempts hunters to act irresponsibly or illegally to harvest the big one. Poachers make their business and trade from trophy items such as large antlers, gall bladders from bears, nongame animals such as falcons, etc. However, it is the opportunistic hunter who sees the big buck on the other side of a posted fence. A hunter at this stage might be tempted to take the shot anyway. As hunters, we must continue to demonstrate responsibility and restraint, especially at this stage.

Trophy Phase Incentives

Phase IV - Method Stage

Description—Method stage hunters have usually spent a lot of money and have all types of specialized equipment. Decoys, calls, boats, hunting dogs, blinds, feeders, bowhunting and muzzleloading equipment are symbols of this stage. Hunting is an important part of a person's life. Hunters seem to eat, breathe and sleep hunting. They spend a lot of time preparing for the upcoming season.

Taking of game is secondary to how it is bagged. Satisfaction is measured in terms of how the hunt went. The dogs performed well. The decoys or calls lured in the animals. Hunters described how they trailed or what signs gave them clues. The kill is usually talked about on the animal's terms, not the hunter's. Hunters at this stage still include the final taking of game in their conversations.

Problem—There are fewer problems with hunters in this stage. Hunters at this stage should be especially concerned with their image toward the non-hunter. Are they talking or thinking so much about hunting that it dominates every conversation? Are their tools so advanced that they forget that their four-wheel drive can cause crop damage or erosion?

Method Phase

23 BEST COPY AVAILABLE

Phase V - Sportsman Stage

Description - The sportsman or "mellowing out" stage is when hunters find total satisfaction in the quality of the outdoor experience. These are the hunters who can forget their sporting arms and still reflect the same enjoyment. They are usually the seasoned or veteran hunters who have hunted most of their life. They have had many memorable hunts. Now, they enjoy hunting just as much, but they go back to wondering and reflecting on nature. They seek to learn even more about nature. Some write about their experiences. They often do not talk about their hunt. They smile at hunters in other stages, perhaps remembering their moments at those stages.

Problem - The problem with this stage is one of sadness. The hunter at this stage is troubled with loss of habitat, loss of quality, with "macho" hunters. Sportsman stagers usually must spend lots of money to find a place to where they can escape. Being older, they may not get to hike farther away, so they buy a remote cabin and share this stage with their close friends and families. But there are fewer places to where they can escape. Hunters at this stage find themselves wondering about the future of hunting.

The five stages can be experienced by all hunters at given moments. A hunter might be at several stages at one time. Usually it depends on the specific animal. It could also depend on the day of the hunting season. A hunter might start out at the method stage. Then, during the last week of the hunting season, he or she might go back to the limiting-out stage.

It is important for hunters to understand these stages. Each is a natural experience. Hunters should not be disappointed with their particular stage. After all, they should feel satisfied about their experience.

Sportsman

However, remember the problems you need to be most aware of at each stage. Avoid falling into the trap of irresponsible hunting. Do not forget what is right and legal. Each hunter should set their sights for the sportsman stage but take it one step farther.

Sixth Stage - The "Give Back" Stage

Description—One stage not referred to in the study is a stage which each hunter should consider. Are you passing on the proper hunting values? Are you introducing others to the rewards and experiences of hunting? Are you teaching others about safety and responsibility? If you are an adult, are you a hunter education instructor? If you can answer yes to any of these questions and are satisfied by the result, you might be at this stage.

Hunter Education — Part of the "Give Back" Phase

NEW AND CHANGING ATTITUDES

Hunting is a way of life. Today, most people are non-hunters and about 10 to 15 percent of the United States population is against hunting. Understanding non-hunters plays a bigger role in hunting. Non-hunters, over 80 percent of our voting society, have a strong influence in the future of hunting. It is a fact that most non-hunters do not object to hunting itself. They object to the way some hunters behave.

Attitudes about hunting are influenced greatly by the media, by gun issues and by urbanization. The media has perhaps the strongest impact on our beliefs and our subconscious selves. Advertising aims to reach our subconscious so we will ultimately buy a certain product. It is the same way with anti-hunting attitudes.

For example many of Walt Disney productions, including the ever-popular "BAMBI," show animals with human emotions. "Guns of Autumn" is a documentary which depicts the negative aspects of hunting. Recent shootings involving so-called "assault weapons" may also be used in the same sentence with hunting **weapon** when it actually has nothing to

do with hunting. Hunting **firearms** are not intended to be weapons which are those instruments designed mainly for fighting and warfare.

What these examples demonstrate to the hunter education student is that there are attitudes for and against hunting and as well as for and against guns. At times, you may be challenged about your personal choices and about why you hunt.

Hunters often react defensively to such challenges. They may answer, "Hunting is good for wildlife management." "I hunt because hunters prevent animals from starving." Although these may be indirect benefits of hunting, these are not really the reasons we hunt. We hunt because it's fun. We hunt because we get to experience so many emotions: excitement, fear and peace.

Hunting is a personal choice. It is a part of our freedoms. If you choose to hunt, be proud. Try to understand anti-hunting and non-hunting feelings. We are all actually fighting for the same thing: wildlife preservation. If we set aside our personal differences, wildlife might actually reap the rewards. Money spent by hunters and anti-hunters promoting their side could be spent on rebuilding land for wildlife or cleaning up pollution.

According to a 1989 study by John Thomas and Clark Adams of Texas A&M, there are some distinct thoughts about wildlife shared by people of Texas.

The study determined what kinds of people and how many people enjoyed what types of outdoor recreation. It explored public attitudes towards conservation. It examined support for wildlife and wildlife agency projects. It also gathered input on public demand.

Some of the findings showed the following:

The Public and Texas Wildlife
(Thomas and Adams, Texas A&M)

TEXANS-(1988) over 16 years of age

9%	Do not participate in wildlife-related recreation
27%	Participate in boating, hiking, camping and wildlife watching
6%	Hunt and/or fish only
58%	Participate in all types of wildlife-related recreation
81%	Did not know which agency is responsible for managing wildlife (Texas Parks and Wildlife Department)
75%	Favor wildlife programs conducted by the Department
24%	Texans hunted within the last three years

FACTORS PREVENTING TEXANS FROM HUNTING

(ranked in order from most common answer to least common answer)

- ❑ Leases Costly
- ❑ No Time
- ❑ Too many hunters
- ❑ Good areas too far
- ❑ Limited knowledge
- ❑ Lack of game
- ❑ Costs too much
- ❑ Equipment costly
- ❑ Health reasons
- ❑ Lack of interest

Thomas and Adams provided recommendations at the end of their study involving ways we can improve wildlife and conservation efforts.

They can be summarized as follows:

- Improve Texas Parks & Wildlife Department's Profile Among the Public (Hunter Education programs does this primarily for hunters and parents of youngsters who hunt.)
- Promote Public Participation in Wildlife-Related Activities (create more public access and opportunity)
- Promote Public Participation in Hunting (create cheaper ways and opportunity to hunt) - Type II wildlife management areas are addressing this recommendation.
- Generate Program Revenues (encourage citizens from all recreational groups to help fund wildlife and conservation activities, or at least those activities to which they are involved)
- Develop Recruitment Opportunities and Methods (Operation Orphans, sponsored hunts and hunter education encourages youngsters involvement in hunting and the outdoors)

FUTURE OF WILDLIFE AND HUNTING

Our future would look dim if it were not for the fact that people are waking up. They are beginning to realize if we do not save habitat, an animal's home, there will be no future for wildlife. Habitat preservation is the bottom line! (See Section 3 for discussion on habitat.)

If it were not for wild lands, we would not have any of the enjoyment wildlife and the outdoors brings us. If **acid rain** (pollution) or pesticides were allowed to get so bad that it killed forests and rivers, we would have no future.

Just as the hunter must develop a hunting ethic (See Section 4), we must all develop what Aldo Leopold called **Land Ethic**. This land ethic combines everything that is helpful to land, water and wildlife. Aldo Leopold wrote about understanding wildlife by understanding the landscape as a whole. We must all learn about it, understand it and then make wise decisions about its use.

But this understanding must come from everyone. Your concern is not enough. Land developers, doctors, lawyers, oil people, economists, gas station attendants, scientists, military persons, managers and citizens must all realize the importance of wildlife and landscape. City, county and state planners need to work together. People need to voice their concerns. Only then can we have hope for the future of habitat and wildlife.

A renewed land ethic is one that appreciates wild values and traditions. It works to save, protect and improve resources. It calls for understanding others and respecting their beliefs and opinions. It takes a sacrifice on your part to give up any interest that hurts the future of wildlife.

The future of hunting rests with the future of wildlife and with peoples' opinions. Good opinions about hunting will come because of good behavior by hunters. The more safe and responsible hunters there are, the more hunting will be respected as a sport.

DEFINITIONS

SCAVENGERS—eats "carrion" or leftover animal remains
PREDATOR—animal which kills other animals for food
OMNIVORE—Feeds on both animals and plants
NOMADIC—having no permanent home
CIVILIZATION—culture of people, nation or period reaching high social organization
TECHNOLOGY—applied science providing members of society with things they need
PALEOLITHIC—ancient man; stone-age man
CONSERVATION —planned use of a natural resource so as not to lose or destroy it
MANAGEMENT—(outdoor) controlling or directing natural resources
NATURAL RESOURCE—natural formations, wealth or products from earth
PRESERVATION—total protection of a natural resource
BOUNTY—money reward given to persons for killing "harmful" wildlife
"LACEY ACT"—Federal act regulating transportation and selling of wildlife
BOONE AND CROCKETT CLUB—organized group concerned with big game and records of kills
ENVIRONMENTAL IMPACT STATEMENT—statement required of corporations or other landowners wanting to make changes to environment
1983 WILDLIFE CONSERVATION ACT—gave T.P.W.D. regulatory authority to manage Texas wildlife
FEDERAL AID IN WILDLIFE RESTORATION (P/R) ACT—Funding act which charged taxes on sporting arms and ammunition
"UN-ENDANGERED" SPECIES —those animals which have benefitted from conservation efforts.
VENISON —meat from animal, especially deer, used for food
MARKET HUNTING—hunting to produce animals or their products for society and demands
POACHING—illegally hunting animals
HERITAGE—inherited rights or traditions passed on through generations
WEAPON—an instrument or device of any kind used for fighting, warfare, defense
FIREARM—an instrument or device from which a bullet or projectile is fired
ACID RAIN—acidic precipitation formed especially from pollutants
LAND ETHIC—obligation to use or preserve land in the right ways

CHALLENGE—obtain or purchase the book, A Sand County Almanac. Read "Land Ethic" and "Wilderness" sections and do a book report on them. Perhaps you can do this as an option to your studies at school. If you have graduated from school, read the book to explore your own thoughts about conservation.

ASSIGNMENT —Write down reasons why you hunt. Write as many statements as you can. Review your answers trying to determine what are real reasons and what are benefits of hunting. Write down any words which describe emotions or feelings. Prepare yourself for explaining to others why you hunt—why you "really" hunt.

A SAFE TEXAS HUNTER IS COURTEOUS CAREFUL CAPABLE CONSIDERATE

HELPFUL REFERENCES

A Sand County Almanac, Aldo Leopold - Sierra Club/Ballentine book, New York.

Mediations on Hunting, Jose Ortega Y Gasset, translated by Howard Wescott, Charles Scribner's Sons, New York.

Restoring America's Wildlife (1937-1987), U.S. Fish and Wildlife Service.

The "Un-endangered" Species, available from National Shooting Sports Foundation, P.O. Box 1075, Riverside, Connecticut 06878.

1985 National Survey of Fishing, Hunting and Wildlife Associated Recreation (March 1989), U.S. Fish and Wildlife Service, Washington DC.

The Public and Texas Wildlife, John Thomas and Clark Adams, 1989. Texas A&M University.

An Assessment of Hunter's Attitudes and Preferences concerning Texas Parks and Wildlife Regulatory Policies, Thomas and Adams, 1982. Texas A&M University.

Hunter Frequency and Participation Study, available from National Shooting Sports Foundation (see above).

3 HUNTING – A TOOL OF WILDLIFE MANAGEMENT
...The Sportsman's Role

OBJECTIVES

- To give you an overall understanding of ecology and natural relationships.
- To encourage you to think more about your effects on the environment.
- To review wildlife principles and practices to give you a clearer understanding about the role hunters play in wildlife management and conservation.

Wildlife is one of the most valuable natural resources. Wild animals — **game** (legally hunted) and **nongame** (not hunted) — are important to the quality of human life. Just seeing wild animals in their natural surroundings, photographing them or hunting game species, brings enjoyment, relaxation and better health to those who go afield.

In Texas, for example, hunting is one of the major recreational uses of wildlife. Each year Texans spend more than 25 million days sport hunting and over a billion dollars in the state, making it very important to businesses and the economy. Nationwide, hunters spend more than $10 billion on hunting each year.

Wildlife is important to people in many other ways. Every **species** is special and occupies its own place or **ecological niche** in nature. Both game and nongame wildlife must be respected and valued. If one species is lost, it may cause many others to disappear as well. All plants and animals, including humans, depend on other species for survival.

OUTDOOR AWARENESS AND STEWARDSHIP

To some Texans, the **outdoors** is what is in their own backyards. Wildlife they see are usually songbirds, squirrels and even a few rabbits and deer. To Texas hunters, the outdoors is deserts, countrysides, hills, valleys and waterways away from towns and cities. Outdoors is wild. People must learn to appreciate and take care of everything wild. Hunters need to appreciate more than just the animals they hunt. Non-hunters must also make sure that their actions do not harm wildlife, land and water.

Most people learn to appreciate the beauty and sound of the outdoors. But many do not actually know what is there. They do not know what makes certain sounds. They may learn about animals by watching television, reading, visiting parks and zoos, or by going on field trips. But many do not really get to visit the outdoors and exist as a part of nature like hunters do.

There are thousands of things to learn in nature. The overall goal should be to view nature as a whole. Being aware of all things nature has to offer is easy to say, but not always easy to do.

Aldo Leopold is a man admired as a leader in wildlife, conservation and nature appreciation. As a student, the outdoor lover would do well to live by one of Leopold's sayings. He talks about it from a teacher's point of view. But you should look at it from a student's point of view.

> ***"The objective is to teach the student to see the land, to understand what he sees and (to) enjoy what he understands. I say land rather than wildlife, because wildlife cannot be understood without understanding the landscape as a whole."***
>
> (Aldo Leopold, The Role of Wildlife in Liberal Education.)

Are you understanding and enjoying the land? Or are you just learning everything there is to know about white-tailed deer? It isn't wrong to learn only one thing. But it limits your ability to be a true sportsman.

A **steward** is a keeper or caretaker. A land steward is a caretaker of the soil. A wildlife steward is a caretaker of animals. Stewardship is the art of caring for land and animals. A wildlife steward asks if the needs of animals are being met. Do they have good habitat? Are there too many for the habitat to support? Are there enough animals to see and enjoy? Do they have a future? Today's stewards are thought only to be wildlife biologists, managers, conservation agents or game wardens. But, in order for wildlife to continue, each and every citizen and landowner needs to be a steward. Each of us needs to ensure that wildlife have a chance.

RENEWABLE RESOURCES

Renewable resources are living natural resources. They can be replenished through growth if provided with the right conditions.

As we learn about nature and stewardship, we realize that every living thing depends on something else to survive. Animals depend on other animals or plants to survive. Plants depend upon soil with its minerals, nutrients, water, air and the number one source of energy — THE SUN.

Soil consists of **inorganic** (nonliving) matter such as minerals, air and water. It also is made of **organic** material called humus. Organic matter is made of animal by-products or decaying matter. It is what makes soil able to grow plants. Soil also anchors plants and holds water and minerals.

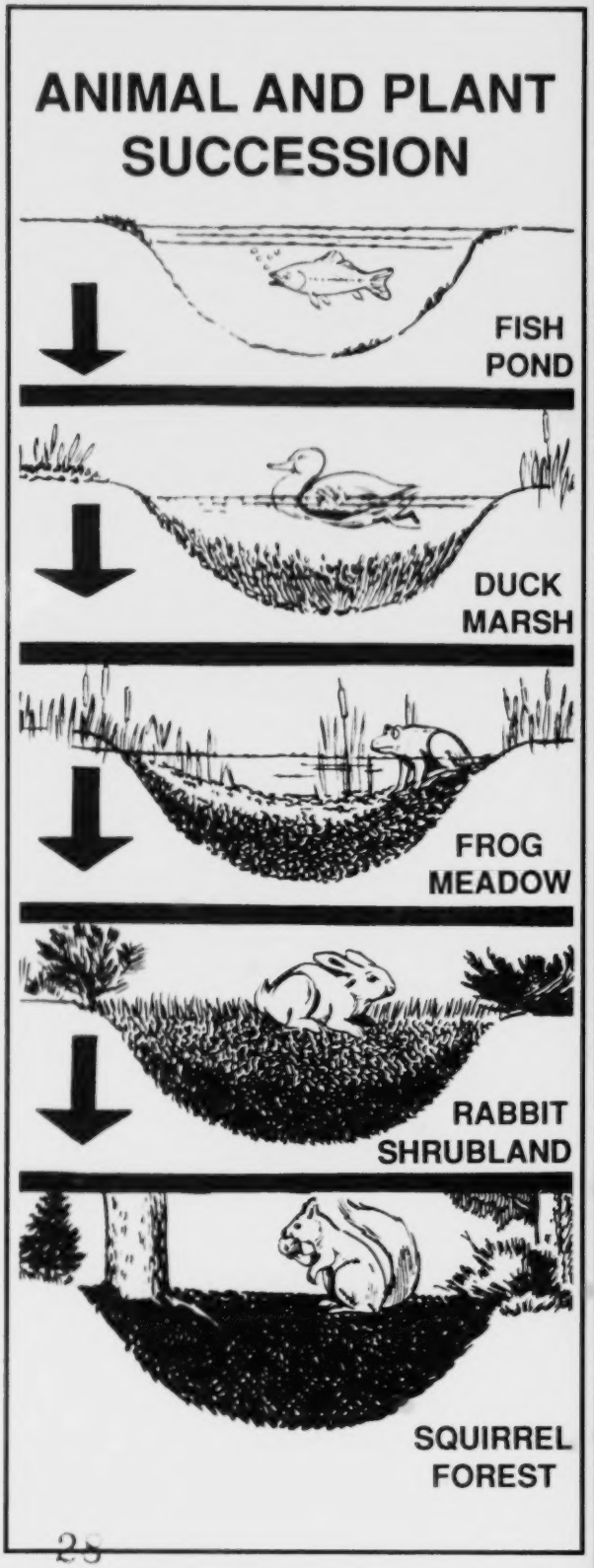
Land or water is necessary for all living things to grow. Living organisms form a biological **food chain**. The chain starts with **producers** such as plants which provide foods for **consumers**. Plants and animals feed man — the top of the food chain. **Decomposers** also are important in the food chain. These break down organic matter into inorganic substances, releasing nutrients back to the environment.

Ways man can disrupt natural food processes:

1. Farming practices — reducing the variety of plants to one or two plants.
2. Overgrazing — reducing food and cover through use of domestic animals or uncontrolled wild animals.
3. Construction — houses, highways, industry all take land out of plant and wildlife production.
4. Pollution — makes animal habitats and land unhealthy.
5. Over-harvesting — reducing animals which breed.
6. Under-harvesting — reducing adequate food and cover.
7. Habitat destruction — other than construction; fires, channels, clearcuts and other practices can lead to soil erosion or less variety of plant life. Used in the right ways, destruction such as planting food crops and fires can increase certain species of wildlife.

Climate and weather control what soils are able to produce. Certain plants have learned to adapt to hot, dry climates. Others need plenty of rainfall to survive. Depending upon the amount of sunlight, water, air, heat and soil type, each land body produces a certain **ecosystem**. Texas has many larger ecosystems or ecological zones. Examples are the blackland prairies, pineywoods and high plains. Each unit has a particular climate pattern and set of plant and animal species.

The largest ecosystems relate to a certain type of land, climate and **altitude**. As you move farthest north or to the highest altitudes, you might reach the **tundra** or alpine. Further south in dry climates you might hit semi-arid deserts. Overall, there are many zones across North America, each with a different set of plants and animals. Some plants and animals such as the coyote and deer can adapt to many systems. Others such as the pronghorn antelope are adapted to a specific **environment**. When a species such as the red-cockaded woodpecker is dependent totally on one ecosystem or environmental condition for its survival, it is called an **indicator** species. In this case, the woodpecker is an indicator of old-



aged pineywood or pine/hardwood communities in East Texas. If the woodpecker is present, it indicates that the pineywood ecosystem is there.

The environment is made of plant and animal **communities**. Some are small enough to fit inside a log. These are called microcommunities. Others might be as large as the entire ecosystems. Communities are made up of plant and animal relationships.

Communities are in constant change, however. These changes are referred to as **succession**. Succession means that if a plant and animal community such as a pond is left long enough it will change. Soil is deposited into the pond until it becomes shallow. Taller plants and cattails start to grow around its edge. Pretty soon the pond is a marsh. Then, the marsh eventually fills up with so many plants that it holds more soil. Eventually, the marsh turns to prairie; the prairie to shrubland; and the shrubland to trees.

At one point, changes cannot go any farther. This results in a **climax community**. Unless man or natural disasters such as fires or floods wipe out this last community, it will stay that way for a long time.

At each stage in the succession, there is usually a different set of plants and animals which take over. Man is able to disrupt these changes through management. Managers can set fires which burn off the shrubs and/or trees so that the ground gets sunlight. Fire also helps certain plant seeds grow. After a short while, grasses and weeds start to grow. Grazers which feed on grass come back to the area. The cycle starts all over again. Each succession cycle may take decades or even hundred of years.

Wise management can produce the most desirable community for a given area providing animals with the most ideal **habitat**. Habitat is an animal's home. It consists of **food, cover, water** and **space**, all suitably **arranged**.

The best habitat for most wildlife includes many smaller patches of foods, cover, water in one large space. The most ideal is where animals can meet all of their needs in a small area so they don't have to spend a lot of energy travelling from food to cover to water.

For example, bobwhite quail may prefer a combination of shrub areas and good grasslands or feed plants. Quail will spend much of their time where the two areas meet. This is called **edge effect**. Most animals can be found where food and cover meet, including a water source. This is why river bottoms are ideal. They offer many animals all of their habitat needs along one corridor.

How does this lesson in basic ecology help you, the hunter? One, it helps you to understand man's relationship with animals and plants. Two, it gives you a starting point from which to learn how your actions might affect an entire community, food chain or environment. Three, it tells you to think more about the whole rather than just what you plan to take from a community. Four, it helps you understand wildlife principles and practices more easily.

Remember, if you take away a certain population of plants or animals from a community, the community may not survive. This is what typically happens when man and technology, houses and roads move into an area. In order for us to have wildlife, we must learn how to live in harmony with wildlife. We must leave enough habitat for the animals to survive.

BEST COPY AVAILABLE

WILDLIFE MANAGEMENT PRINCIPLES

A MANAGEMENT LESSON

In the 1920s, a huge deer die-off helped teach people that laws which were destined to protect wildlife from all hunting don't necessarily help all animal populations.

On the isolated Kaibab Plateau in Arizona, a herd of mule deer had managed to survive heavy hunting pressures so that by 1900 it numbered about 4,000. Then, the herd was protected by law so that no one could hunt them. The terrain kept the deer from migrating to other locations, and government hunters killed most of the herd's natural predators such as bears, mountain lions and wolves.

In 25 years, the herd had swollen to about 100,000 animals. The deer stripped every food plant, and the health of the herd became very poor. The winters of 1924 and 1925 taught conservationists much about wildlife protection. Heavy snows and severe food shortages resulted in the deaths of almost half of the herd. About 50,000 mule deer perished in just two winters.

Hill Country "Browse Line"

A similar tragedy occurred in Pennsylvania. After deer had been thought **extinct** in that state, several were brought in and released. Most of the predators, however, had been killed. What little hunting was allowed didn't slow growth of the herd, and it grew out of control. At the same time the Kaibab mule deer were dying, thousands of Pennsylvania white-tailed deer were dying as well, their food supply stripped bare.

Wildlife managers learned from these and other lessons that there's much more to conservation than just protecting wildlife. They began to learn that nature overproduces its game resources and, given good habitat, conservation provides for a surplus that can be harvested by hunters. Conservation calls for man to help develop the best habitat possible. Wise management allows hunters controlled harvesting of the surplus.

Wildlife **management** is like many businesses. It is concerned with making, using and protecting the rights to a product. In this case, wildlife is the product. Nature and habitat produce it. Management can change it or help it along. Hunters and other outdoor enthusiasts use the product.

The three main factors which determine the production of wildlife are:

1. the animal's ability to reproduce itself.
2. the quantity and quality of habitat.
3. weather factors.

Certain factors limit the potential production of the product. They are:

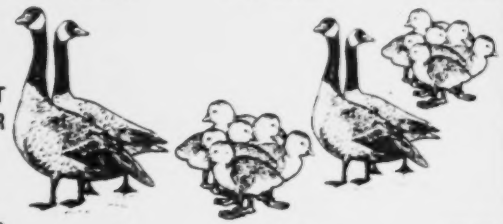
1. disease
2. starvation
3. predators
4. pollution
5. accidents
6. old age
7. hunting

These are called **limiting factors**. Once the product is there, these can take it away.

Four things determine how a specific population of animals can change in a given area over one year's time. They are:

1. birth rate — young normally produced each year
2. death rate — animals which normally die each year
3. **immigration** — animals which move in from neighboring areas
4. **emigration** — animals which move out of the area

Every year animals reproduce. Larger animals such as deer or elk usually give birth one time each year to one or two young. These animals usually live longer lives. Smaller animals such as rabbits, muskrats and quail can give birth to many young up to several times a year. However, they usually live only several years. Up to 80 percent of the total population may not survive over a given year. But in the case of the muskrat, they can be back to a normal population after the next year's reproduction.

ANIMAL POPULATIONS	POTENTIAL GROWTH		
	1 PAIR	6 YOUNG	8 TOTAL
1ST YEAR			
2ND YEAR	4	24	32
3RD YEAR	16	96	128
4TH YEAR	64	384	512
5TH YEAR	256	1,536	2,048

This is nature's way of producing wildlife so there will be enough left to reproduce the following year. The extra number of animals is called the **biological surplus**.

The annual cycle starts in the spring or early summer for most animals. Babies are born, and there is a surplus. In the spring, many new plants sprout up and insects are abundant. Most provide rich protein for the fast-growing young. By summer, most young are learning nature's way and can start to survive on their own. In the fall, berries and **mast** such as acorns provide much needed starch, fats and proteins necessary to build up body fat. By winter, most animals have grown larger in size and have eaten enough food to carry them through the mating season or rough weather, especially animals in the North. Some animals such as black bears and some fur-bearing mammals **hibernate** during the winter months. The bear's fat reserves, usually from berries, are enough to carry it through the sleep-like state.

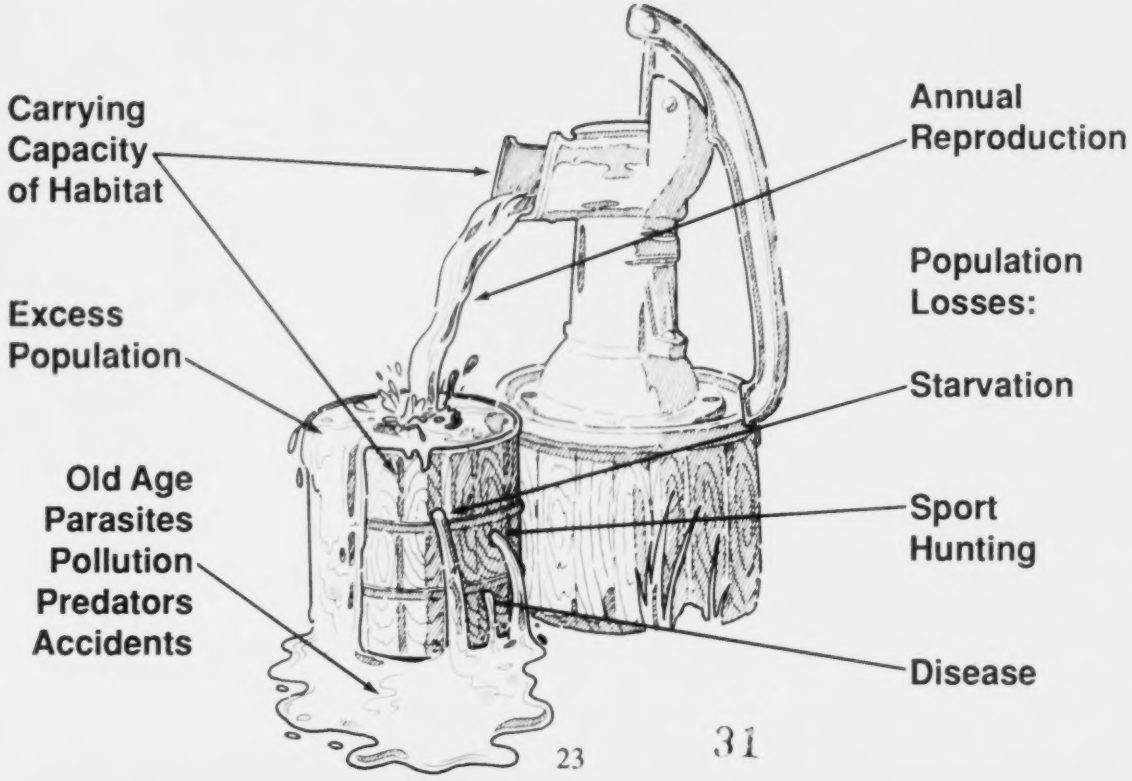
Throughout the year from the time of birth, limiting factors take away from animal populations. Young quail might die because of flood waters, predation by foxes and fire ants, or by farming practices. In the winter, quail might be hunted. The winter might also cause ice and prevent them from finding necessary food or expose them to predators or the cold. In the spring, only a few birds from a large covey might be left to carry on the next year's population.

Many things can affect birth and death rates. However, if habitat is suitable, there are usually enough animals to carry on normal populations. If populations are too high they might exceed their **carrying capacity**. This is the ability of the habitat to support a given number of animals over a period of time. If animal numbers go over this capacity, they might permanently damage their habitat, resulting in less animals in future years.

It is the wildlife manager's job to see that:

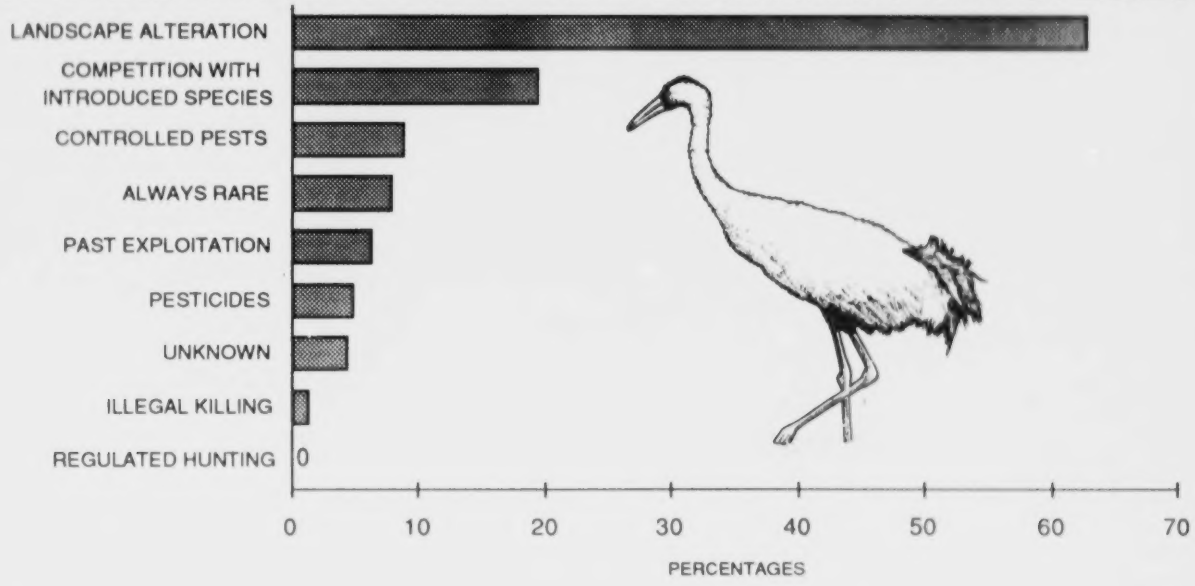
1. There are enough animals to carry on normal populations over time.
2. Habitat is healthy enough to support the animals.
3. Too many animals do not permanently damage their habitat.
4. We purchase or develop new habitat taken away because of man's activities and destruction.
5. We do not lose animals to extinction or cause them to become threatened or endangered.
6. We stock animals into vacant and healthy habitats.
7. Regulate and control hunters to trim the surplus of animals.
8. Prevent or control wildlife diseases.
9. Inform the general public and the citizens of Texas of the status of animals.
10. Work with landowners, the legislature, industry, other agencies, and support groups to achieve the goals of producing or maintaining good habitat and wildlife populations.

CARRYING CAPACITY



WILDLIFE MANAGEMENT PRACTICES

WHAT HAS CAUSED THREATENED and ENDANGERED SPECIES?



Man-made changes in the environment can hurt or help wildlife. Examples of human practices which can hurt wildlife are construction, pollution and poaching. Practices which can help wildlife include flooding, fire and sport hunting. Certain practices might eliminate certain species. At the same time, the changes might help other species. Since man has moved in, it is the wildlife agency's job to determine what animals need help. For example, if foresters clearcut a small patch of timber in East Texas, they might wipe out gray squirrel habitat. But once planted, the plot might provide food for deer and turkey. Texas foresters usually work with wildlife managers so that loggers can provide trees for paper mills without harming the overall populations of wild animals living in the area. This is because both animals and trees are renewable resources.

If forestry practices are done wisely, the Forest Service or private companies actually can improve the arrangement of suitable habitat. However, practices must be careful to consider threatened or endangered species such as the red-cockaded woodpecker.

You can see that a wildlife manager's job is not so easy because he or she must work with all types of people or agencies and help them understand how their practices (or way of making a living) affects wildlife. If a company's practices eliminate key habitat or reduce animal populations below normal levels, they must stop or change their way of doing things. The toughest thing for many wildlife species is that they are competing with man's greed for luxury and money. Wildlife does not have a dollar sign associated with it to help it compete with other resources used in human growth and expansion.

In Texas, some landowners are realizing a real value from wildlife through hunting. Especially during tough economic times, leasing has provided many landowners with much needed cash flow. There are new laws which assign dollar values to replace an animal illegally taken from the Texas outdoors. These kinds of efforts might help save a future for all wildlife species.

In Texas, management practices are a part of TPWD's Wildlife Division's responsibilities. Practices are divided into specific projects. Most deal specifically with habitat or a certain group of species.

Wildlife management practices are most important when they develop, maintain and protect habitat. Since each habitat produces certain kinds of animals, managers also maintain and protect certain animal communities or populations.

The following represents a general guide on types of wildlife management practices and how each helps wildlife:

1. HUNTING REGULATIONS — Hunting regulations are set to protect habitat and preserve animal populations. They also serve to distribute hunting pressure and opportunity fairly among the hunting public. Examples of regulations which benefit wildlife are setting daily and seasonal time limits, bag limits and legal methods for taking wildlife.

2. HUNTING — Hunting practices help managers reach long-term goals of harvest in order to protect habitat. Examples include the white-tailed deer in the Hill Country. Currently there is a high concentration of deer. Without hunting, most of the deer's habitat might have been destroyed and diseases might have taken many animals. As it stands, the

deer herd is maintaining high numbers. Permanent damage to habitat is still possible. Managers and landowners must continue to decide how to provide the large number with quality habitat. If they don't a large die-off is possible.

3. PREDATOR CONTROL — Sometimes, predation may be a serious limiting factor to certain animal species. If pressures by the general public are great enough or if the animal's population is in trouble, there might be the need to reduce the predator's numbers. Although this was a popular practice in the past, today's manager does not use this method much outside of normal hunting and trapping practices or when reintroducing prey species to former ranges. For example, since desert bighorn sheep are being reintroduced in the Trans-Pecos region, it would be beneficial to reduce the predation threats by mountain lions. This enables the sheep numbers to grow faster so they can once again establish a good population.

4. ARTIFICIAL STOCKING — In Texas, pronghorn antelope, elk, white-tailed deer, game birds including pheasants, quail, turkeys and exotic species have all enjoyed successful transplants or restocking practices. The Eastern turkey is being restocked into East Texas. Currently, stocking practices are being evaluated to determine future efforts.

5. CONTROLLING OR PREVENTING DISEASE AND ITS SPREAD — Wildlife diseases can be devastating if not controlled. Avian cholera, a contagious disease of most wild and domestic birds caused by a bacteria, poses a serious threat especially to ducks and geese on congested wintering grounds. Once cholera occurs, managers must collect and burn waterfowl carcasses daily to prevent its spread.

6. HABITAT MANAGEMENT — The key to wildlife management in North America will rest with habitat management.

Beneficial habitat management practices:

Food plots and planting - benefits most wildlife species.
Controlled burning - cuts back succession and produces certain plants, especially new forbs and grasses.
Building brushpiles - species such as rabbits use them for shelter.
Timber cutting - cuts back climax communities, or to allow sunlight to reach the forest floor. Smaller clearcuts, shelter or selective cuts are typically better for wildlife.
Nest boxes - provides nesting cover.
Ditching - lets water into or out of an area.
Dyking - holds water in or out of an area.
Controlling nuisance plants or animals - prevents species such as skunks and raccoons from destroying nest sites, nest boxes or food plantings.
Mechanical brush or grass control - chaining, mowing or bulldozing are examples of clearing paths through undesirable habitats.
Fertilizers - enhances growth of foods or forage.
Grazing - cuts back plant growth and succession, producing other favorable growth such as in browse plants.
Water holdings - ponds, tanks, guzzlers and springs or seeps provide water to many dryland species.
Farming - dryland or irrigation, provides food and nesting crops for many species. Also, if the practice does not disturb fence rows or weed ditches, these provide cover for many animals.

7. MANAGEMENT FUNDS/PROGRAMS — Besides Pittman-Robertson funds, many states have initiated programs which help fund habitat and nongame programs. In Texas, one such program is called the **Conservation Reserve Program**. Part of the Food Security Act signed by President Reagan in 1985, it is a voluntary program designed to conserve and improve soil and water resources. It does this by taking erodible land and wetlands out of crop production. The program helps to reduce soil **erosion** and improve water quality. It also benefits wildlife and fish habitat. Landowners enter into a 10-year agreement with the U.S. Dept. of Agriculture. In return for establishing and maintaining permanent cover, the landowner receives funds through annual rental payments. Native grasses, forbs, legumes, shrubs and trees are possible plantings.

Another funding program benefitting nongame species was established in 1983. The Texas legislature created the Special Nongame and Endangered Species Conservation Fund. The fund is supported by voluntary contributions and purchases of nongame prints, decals and stamps. Approximately 135 species of mammals and 540 birds can be considered for management with the funds. Of these, 31 mammals and 29 birds were considered endangered or threatened in 1989. Nongame items can be purchased or donations sent to the Texas Parks and Wildlife Department.

The entire picture of outdoor resources and living processes can be summarized as follows: (taken from Robert Warpinski, Project I-C-E, Green Bay, Wisconsin)

1. Energy from the sun is converted by plants into a usable form that all living things can use.
2. An ecosystem is a unit of interaction between land, animals and plants.
3. Factors limit how many animals can live in a given area. Therefore each area has a carrying capacity.
4. An adequate supply of pure water is essential to life.
5. An adequate supply of clean air is essential to life.
6. Natural resources are not equally divided over earth over a given period of time and greatly affect conditions and quality of life.
7. Many human factors have greatly influenced changes in land use. (e.g. transportation, population growth, increased leisure time)
8. Many factors have greatly influenced attitudes about the environment (e.g. economic, cultural, social, political)
9. Humans have the ability to manage and change the environment.
10. Short-term gains may produce long-term environmental losses. (e.g. construction, recreation, politics)
11. Harmful individual actions, copied or made worse, produce significant changes to an environment over time. (e.g. car pollution, littering, industrial wastes)
12. Private ownership must practice stewardship and should not violate the right of others. (Humans are not separate from ecological communities, they are part of them.)

DEFINITIONS/EXERCISE

• *PLEASE COMPLETE THE MISSING BLANKS* •

WILDLIFE — all non-domesticated animals

GAME — wildlife which can be hunted

_____ — wildlife which cannot be hunted

SPECIES — general class of animals which can reproduce among themselves

_____ _____ — an animal's place and role in a community

OUTDOORS — everything outside of buildings, cities, towns, etc.

STEWARD — _____

RENEWABLE RESOURCE — a natural resource which reproduces and replenishes itself

INORGANIC — _____

_____ — to come from living, decaying organisms

FOOD CHAIN–(food web) — biological steps made up of plants and animals and how each step survives on the step(s) below:
Producers - examples: _____
Consumers - examples: _____
Decomposers - examples: bacteria, larvae, small organisms, worms, etc.

ECOSYSTEM — _____

_____ — height; elevation

TUNDRA — vast treeless plains of Arctic circle or mountain top (alpine)

ENVIRONMENT — outdoor conditions which determine living (organic) arrangement

_____ SPECIES — those animals unique to a particular community.

COMMUNITY — plants and animals living together in dependence or relationships

_____ — gradual growth changes to communities; plants and animal types

CLIMAX COMMUNITY — last stage in succession

HABITAT — Components: _____, water, _____, _____, arrangement

EDGE EFFECT — what many animals prefer, that area between two or more habitat components

EXTINCT — _____

MANAGEMENT — man's influences on communities, habitat or succession

_____ — e.g. predation, disease, starvation, weather, hunting

IMMIGRATION — animals which move into a population from another area

EMIGRATION — _____

BIOLOGICAL SURPLUS — animals born each year which can die without affecting the overall normal population

_____ — acorns, fruit of oaks, beech especially liked by deer, pigs, etc.

HIBERNATE — a sleep-like winter state where body conditions slow down

CARRYING CAPACITY — _____

GUZZLERS — artificial water collectors used in dry situations to support animals

CRP — stands for _____ _____ _____, Texas habitat improvement project with landowners

EROSION — wearing away of soil

CHALLENGE — Your challenge is to go outdoors. Whether you go on a hunting, camping or fishing trip, concentrate on leaving your camp site better than you found it. Pick up an irresponsible person's leftover litter. With friends or relatives, participate in clean-up programs on roadsides or beaches.

ASSIGNMENT — Construct or purchase a nesting box or feeder to help wildlife in your backyard. In a notebook, keep track of all animals which nest or visit your backyard box or feeder. Purchase or borrow wildlife field guides which help you determine what animals are there, their ranges, habitat requirements and habits.

— Research and explain why you shouldn't disturb or take home baby animals such as a fawn, nesting birds or what looks like an abandoned animal.

EXERCISE — *LIST THREE HABITAT MANAGEMENT PRACTICES AND EXPLAIN HOW EACH HELPS WILDLIFE.*

_____ — _____
_____
_____

_____ — _____
_____
_____

_____ — _____
_____
_____

HELPFUL REFERENCES

Helpful Wildlife: Working With Nature — Delwin Benson, Wildlife Management Institute, 100 Vermont Ave., N.W., 709 Wire Bldg., Washington DC 20005.

Placing American Wildlife Management in Perspective — Wildlife Management Institute.

Wildlife Management Principles and Practices — National Rifle Association, 1600 Rhode Island Ave. N.W., Washington, DC 20036.

The Hunter and Conservation — National Shooting Sports Foundation, 1075 Post Rd., Riverside, CT 06878.

Readings in Wildlife Conservation — The Wildlife Society, 7101 Wisconsin Ave., N.W., Suite 611, Washington, DC 20014.

Guide to Conservation Action — The Izaak Walton League of America, 1701 N. Ft. Myer Dr., Suite 1100, Arlington, VA 22209.

Conservation Education Catalog — National Wildlife Federation, 1412 16th St. N.W., Washington, DC 20036.

Hunting and Conservation — National Wildlife Federation.

Should We Hunt? — National Wildlife Federation.

Miscellaneous Wildlife Literature and Programs — available from TPWD.

"Project WILD" (for teachers) — contact TPWD in Austin at 1-800-792-1112 or 512/389-4791.

4 HUNTER SAFETY AND RESPONSIBILITY
...The True Sportsman

OBJECTIVES

- To give you an understanding of how hunting accidents occur, what types of accidents occur and how each can be prevented.
- To relate ten rules of shooting safety to practical use in the field, at home, in transport and at the range.
- To define the written law and give you a general understanding of how and why laws and regulations are passed.
- To define ethics and give examples of how unacceptable behavior by hunters influence ourselves, others and the resource.
- To challenge you to act safely, legally, ethically and show a responsible commitment to the outdoors so that you can climb to the top of the mountain of responsibility.

HUNTING ACCIDENTS

Hunting accidents are those accidents which cause personal injury or death to any person as a result of a person's actions while hunting. These accidents are directly or indirectly related to the use of firearms or bows and arrows.

This is the definition used by game wardens who complete a **hunting accident report** for the Texas Parks and Wildlife Department. The reason the department collects these reports is so hunter education can help future hunters avoid the mistakes past hunters have made.

By attending this course, you are made aware of the four main types of hunting accidents. You are given the chance to explore why or how these accidents happened. Most importantly, you will be given guidelines on how to avoid accidents. These guidelines are referred to as the **"Ten Commandments of Shooting Safety."** But, you also will be given tips which might help you avoid other types of accidents as well.

Hunting accidents are a part of a larger picture—that is, accidents in general. An **accident** can be defined as an unplanned, uncontrolled action. It causes or has the possibility of causing personal injury, death, or damage to property. By this definition, a hunting accident could also include near misses, misfires or mishandled firearms and bows.

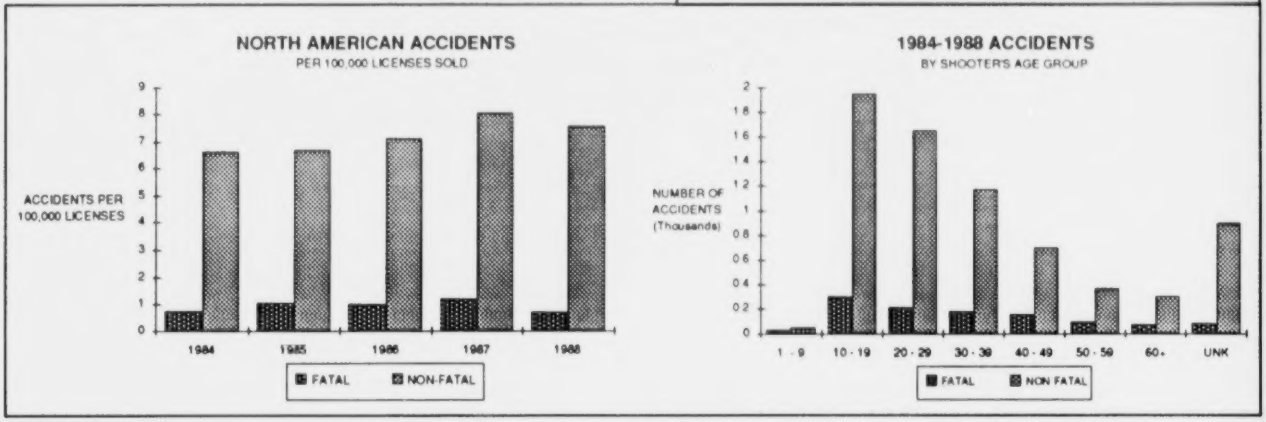
Four main causes of hunting accidents:

Hunter's Judgment—lack of good judgment
- —victim moved in line of fire
- —victim covered by shooter swinging on game
- —victim out of sight of shooter
- —victim mistaken for game

Skill and Aptitude—lack of care and control
- —trigger caught on object
- —loading or unloading firearm or bow
- —shooter stumbling or falling
- —sharpening or handling arrows

Violations of Laws or Safety Rules—lack of preparation, common sense and good habits
- —improper crossing of fence, obstacle or difficult terrain
- —moving sporting arm from or placing it in vehicle
- —riding in vehicle with loaded firearm
- —firearm falling from insecure rest
- —"horseplay"
- —using firearm or bow as a crutch, club or stick to move branches away
- —pointing muzzle in an unsafe direction.

Mechanical Failure—lack of preparation and examination
- —obstructed barrel or improper ammunition
- —defective ammunition/arrows
- —defective firearm/bows



"Blown Barrel"

Nationally, and in Texas, the most common accidents are hunter judgment mistakes. A dove hunter swinging out of his or her safe zone-of-fire; the turkey hunter mistaking another person who was wearing black, blue, red or white clothing; the deer hunter not checking the foreground or background; these are specific examples of the most common types of accidents.

The second most common type of hunting accidents are caused by safety (common sense) rule violations or because of illegal actions by hunters. Discharging firearms in or around vehicles are common types of accidents. In most states, however, it is illegal to have loaded firearms in vehicles. It is illegal to shoot on, near or across public roads. Even on private roads or hunting leases, it is unsafe to shoot from an insecure rest such as out of a vehicle or in close quarters with other hunters. Hunters should not even load their firearm until they are in the field or stand from which they are to hunt.

Violations of common safety practices are mistakes in preparation; common sense, good safety habits. Let your friends or companions know the instant they are unsafe or careless with their firearms. It is advice which may save their life or yours.

Plan your hunt and hunt your plan. This means you should prepare ahead of time to be safe. For example, three quail hunters should plan which alley or side they will take. They should each stick to their path. They should communicate with the others at all times. They should all wear daylight fluorescent orange, especially in heavier cover. Only then will they be able to enjoy the hunt because they can show confidence in one another.

Skill and aptitude mistakes show lack of control and practice. Though less numerous, these are accidents which can be avoided by being careful. When the going gets rough, you should unload first. You won't be taking a shot while climbing, stepping down a steep embankment, or crossing a fence or river. So unload—it is a habit which makes good sense.

Use the two-handed carry when possible. If you fall, hold onto your firearm and keep the muzzle pointed in a safe direction. Dropping or throwing a firearm will cause you to lose control of its muzzle.

Proper Way to Cross Fence

"Blown" firearms are not as common in reported hunting accidents because many do not actually cause injury or death. But, they are common enough that gunsmiths see a lot of blown barrels in their lifetimes.

Accidents like these are caused because hunters have not cleaned or examined their firearms before going afield. They might have reloaded ammunition improperly or used someone else's bad reloads. Obstructions or pressures can also occur from using the wrong size and brand of ammunition such as a 20-gauge shell in a 12-gauge, or a 3-inch shotshell in a 2 3/4" shotgun chamber.

HUNTING SAFETY

Safety is the first step a hunter must achieve in the hunter's climb up the mountain of responsibility.

Preventing hunting and firearm accidents depends on knowing and understanding firearms, handling them skillfully and safely and showing an attitude of confidence and responsibility.

Knowledge and understanding come when you learn the rules of safe firearm handling. Safe habits must become second nature by practicing and developing safe skills. Hunters not only should understand and practice the "ten commandments" of shooting safety, but with the proper attitude, they also must live by them every step of the way.

BEST COPY AVAILABLE

1. **Treat every firearm or bow with the same respect you would show a loaded gun or nocked arrow.** Every time you pick up a firearm, the first thing you should do is check to see if it is loaded. Check to see that the chamber and magazine (see section V for definitions) are empty and that the action is open until ready to be fired. If you do not understand how to determine if it is loaded, be sure not to accept the firearm until someone has safely shown you that it is unloaded. Make sure they show you how the action works. Read your instruction manual carefully before you handle new firearms or bows.

2. **Always point the muzzle in a safe direction.** Do not point a firearm or bow at anything you do not intend to shoot. Control the direction of the muzzle at all times. Never rest a muzzle on your toe or foot. Keep your finger out of the trigger guard until the instant you are ready to fire. Protect the trigger guard from branches or other objects by keeping your finger along the side, but not inside and on the trigger. It is a natural habit for most people to automatically put their finger on the trigger—avoid this bad habit. Always keep the safety on until ready to fire; however, the safety should never be a substitute for safe firearm handling.

3. **Be sure of your target and what is in front of and beyond your target.** Before you pull the trigger you must identify game properly. Until game is fully visible and in good light, do not even raise your scope to see what it is. Use binoculars! Know what is in front of and behind your target. Determine that you have a safe backstop or background. Since you do not know what is on the other side, never take a shot at any animals on top of ridges or hillsides. Wear **daylight fluorescent orange** and encourage your companions to do the same. Know how far bullets, arrows and shot can travel. Never shoot at flat or hard surfaces, such as water, rocks or steel. Bullets and shot are dangerous around these surfaces because they can ricochet. During target practice, make sure you have the proper backstop void of rocks, cement and other such materials.

   The remaining seven commandments are just as important and also reflect understanding, skills and the proper attitude, such as refusing to drink before and while handling firearms or bows.

4. **Unload firearms and unstring recurve and long bows when not in use.** Leave actions open, and store sporting arms in cases when travelling to and from the shooting area. Take bolts out or break down shotguns if necessary. These extra precautions will always be worth the effort because they demonstrate the proper attitude about firearms and archery equipment. Know how your equipment operates. Store and transport firearms and ammunition separately, and preferably under lock and key. Store firearms and bows in cool, dry places. Use gun or trigger locks and guards, especially in the home.

5. **Handle firearms, arrows and ammunition carefully.** Avoid horseplay with firearms. Never climb a fence, a tree or a ladder with a loaded firearm or bow and arrows. Never jump a ditch or cross difficult terrain with a loaded firearm or nocked arrow. Never face or look down the barrel from the muzzle end. Be sure the only ammunition you carry correctly matches the gauge or caliber you are shooting. Always carry arrows in a protected cover or quiver. Learn the proper carries. Try to use the two-hand carry whenever possible because it affords you the best muzzle control. Always carry handguns with hammers over an empty chamber or cylinder. If you fall, be sure to disassemble the gun and, from the breech end, check the barrel for obstructions. Carry a field cleaning kit.

6. **Know your safe zone-of-fire and stick to it.** Your safe zone-of-fire is that area or direction in which you can safely fire a shot. It is "down range" at a shooting facility. In the field it is that mental image you draw in your mind every step you take. Be sure you know where your companions are at all times. Never swing your gun or bow out of your safe zone-of-fire. Never shoot at a target or animal which is in another person's safe zone-of-fire. Know the safe carries when there are persons to your sides, in front of, or behind you. If in doubt, never take a shot. Remember, you can never call a shot back. Wear daylight fluorescent orange so you can be seen from a distance or in heavy cover.

7. **Control your emotions when it comes to safety.** If you lose control of your emotions you may do something carelessly. If you have just shot a target or animal you probably will be excited. At that moment you may turn with a loaded firearm back towards your friends or you might run with a loaded firearm towards a downed animal with the gun safety off. Especially if you have a semi-automatic action, you or someone else may be in danger once you lose control of your emotions. Show discipline. Rehearse in your mind what the safe actions will be. Do not allow your daydreams to replace good judgments. Is your imagination letting you think branches or movements are those of a large buck? Most important, show restraint and pass up shots which have the slightest chance of being unsafe.

8. **Wear hearing and eye protection.** While shooting on range, you must wear hearing and eye protection at all times. Firearms are loud and can create **decibels** which are damaging to a person's hearing. It can be a gradual loss of hearing due to outbursts of noise over many years. The damage could also be immediate, especially if your ears are next to a muzzle blast. Vibrations from the blast are enough to create loss of hearing. Wear glasses to protect your eyes from escaping gasses, burnt powder (especially in black powder shooting) and other debris. In the field, you might consider wearing the type of reduced hearing protection which allows you to hear your companions while cutting down noise levels.

9. **Don't drink alcohol or take drugs before or while handling firearms or bow and arrows.** Alcohol and drugs impair normal physical and mental functions of the body. Therefore, they must not be used anytime you are handling firearms or archery equipment. These substances affect emotions, making it easier to lose control. And, they don't have to be illegal drugs. Over-the-counter medicine might be enough to alter your normal state. If you have to take prescribed medicine, check with your physician to see when it is practical to go hunting. If you do drink, be sure hunting has ended and the sporting arms and ammunition are separate and cased or locked up. Be sure your hunting companions do the same. Hunters must not drink or use drugs before or while driving to, from or on the hunting area.

10. **Be aware of additional circumstances which require added caution or safety awareness.** Just because something isn't listed under these "ten commandments of shooting safety" doesn't mean you can ignore it if it is dangerous. There may be rules such as in muzzleloading or archery which should also be followed by those hunters. For example, shooting facilities might have other rules you must follow to safely shoot at their particular range. Practice reloading safety by following and reading all specific instructions. Trial-and-error is not an acceptable way of learning when it comes to firearms and ammunition.

If every hunter obeyed these first three commandments, there would be very few shooting accidents.

Remember, you are responsible for your own safety as well as the safety of those around you. You are responsible for your own actions. You should hunt only with others who demonstrate responsible actions. Studying and obeying safety rules is something we must do throughout our lives. We are never above or beyond safety and responsibility.

THE WRITTEN LAW (Hunting Regulations)

The second step in the hunter's climb up the mountain of responsibility is made up of the written laws or hunting regulations.

Laws are written rules made by society through their government. Members of society have the option to follow, disobey, or work to change these rules.

Hunting laws are passed by the Texas **legislature**, our governing body. Adopted laws are then studied by the Texas Parks and Wildlife's Commission. The Commission issues regulations to comply with these laws which explain what is legal for hunters to do. The regulations which are passed each year are compiled and distributed by the department in the form of hunting or fishing guides. Every state has hunting regulations which may be similar to or different from Texas regulations. Be sure to write other states and request their regulations long before you plan to go hunting there.

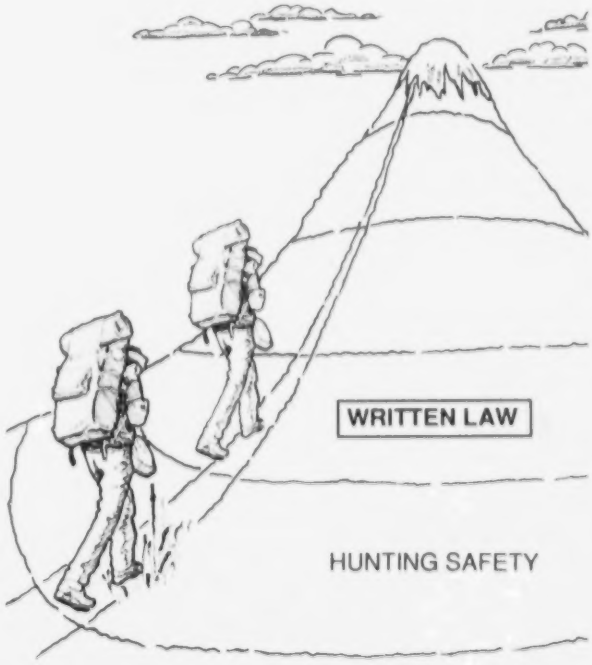
State hunting laws are listed in the Parks and Wildlife Code. They can be classified as either felonies or misdemeanors. A **felony** is a more serious crime than a misdemeanor. It usually involves actions which intentionally endanger the lives of others.

Misdemeanors are crimes which may be less serious, but still are important. Misdemeanors in Texas can be grouped into three classes:

Class A - Most serious
Class B - Moderately serious
Class C - Least serious

If a hunter commits a class C misdemeanor more than once, he or she may be subject to a more serious violation or higher class misdemeanor.

In Texas, a person who violates wildlife laws might also be charged with **civil restitution** penalties. This means they may have to pay additional fees for the cost of having to put that animal species back into the environment. Such costs might range from several hundred dollars for a white-tailed deer to thousands for an endangered or threatened species.



Laws are made for several reasons. These reasons may be importance of safety, responsibility and the future survival of the resource:

Laws protecting the resource and wildlife.
- setting seasons to avoid nesting or reproduction seasons
- closing seasons such as on a refuge or sanctuary
- limited hunting methods and size of firearm or arrow
  - shotgun "plug" for migratory birds
  - caliber or gauge restrictions
  - minimum broadhead width
- provide funding
  - hunting licenses
  - hunting stamps (i.e. archery, white-winged dove, waterfowl)
- hunter education

Laws protecting people and property.
- shooting on or across public roads
- littering
- trespassing to hunt on private property
- hunter education

Laws insuring fair share for all hunters.
- special licenses and permits
- bag limits
- shooting hours

Laws insuring fair chase.
- restrictions on hunting migratory birds over baited areas or from vehicles
- hunting with artificial light
- hunting at night
- hunting from vehicles on public roads

Laws providing information about wildlife populations.
- requirement and inspection of records or tags
- hunter survey cards
- check stations

As a responsible hunter it will be your legal duty to read the current hunting regulations and obey them.

There may be some laws to which you or your companions may disagree. Your obligation would be to try to change the law rather than ignore or violate the law. Report game law violations. Game wardens cannot do the job alone. If we expect hunting, as we know it, to continue, we must all share a responsibility to do what is legal.

NOTE: For information regarding the current regulations, please consult copies of the current Texas hunting guide and/or regulations regarding migratory game birds, fur-bearing animals, freshwater and coastal fishing, commercial fishing and others.

You may also call the Texas Parks and Wildlife office nearest you.

THE UNWRITTEN LAW (Hunting Ethics)

The third step in the hunter's mountain of responsibility is the unwritten law or hunting ethics.

Hunting **ethics** are personal codes with which we live. They are standards. Not only do we pledge to live by written laws, we also pledge to follow these "unwritten" laws. Ethics mean true sportsmanship and responsibility. They deal with what is safe, proper and fair. Ethics are morals; and morals are generally what is right.

The true sportsman observes ethical practices. For example, it may be legal to shoot many times at an animal, hoping to hit it with one shot. But, is it ethical? Ethical hunters will not take shots outside of their **effective range**. The effective range is the maximum distance you can shoot accurately and with confidence. It is the range in which you have practiced and sighted-in your firearm or bow.

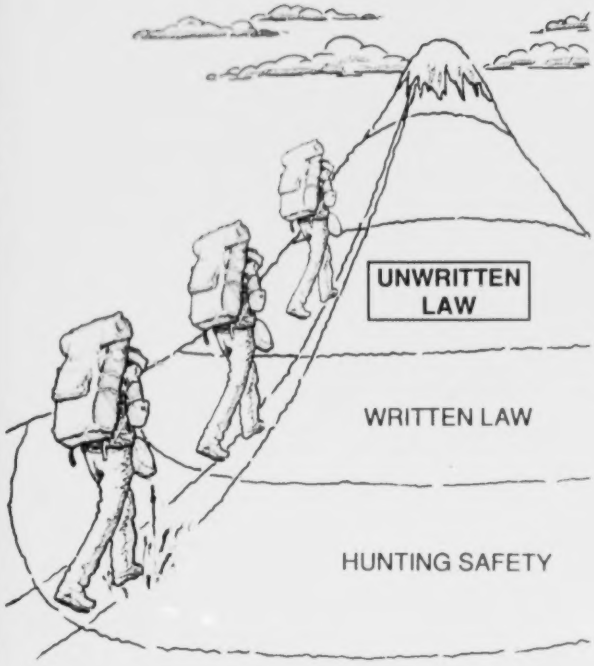
Another way to look at ethics is through the "4 C's" used on the decal given to hunter education graduates. They are the words CAREFUL, COURTEOUS, CONSIDERATE, CAPABLE.

CAREFUL—This word represents a hunter's commitment and attitude to basic rules of safety. The first step or action in any shooting adventure involves safety. If hunters care about themselves they will hunt "defensively" by wearing daylight fluorescent orange and being alert towards unsafe actions by fellow hunters. If they care about friends and relatives, they will practice safe muzzle control and safety awareness every step of the way, even if they get excited or angry.

COURTEOUS—This word refers to a hunter's behavior. If hunters live by the same good "table manners" they use for guests in their homes, they will be courteous. To be courteous means to be polite or gracious. Hunters have no reason not to be polite since hunting is primarily a leisure pursuit. Responsible hunters will not allow ego, "macho" attitudes, competition and money to get in the way.

CONSIDERATE — This word means respect for others and reminds hunters to regard other's feelings, not just their own. Respect other's rights, privileges and emotions as you would your own. Communicate with landowners, other hunters and non-hunters. The number one problem in hunting is lack of understanding. Hunters would do well to try to understand others' roles and opinions about wildlife.

CAPABLE—This word reminds hunters to learn all they can about a subject before trying it out for size. Learn the concepts behind the motions. Then, practice and practice some more. Developing capable, confident actions, especially around firearms, does not come overnight. We are not born with hunting skills. We must develop them. When choosing a hunting companion, pick one who is capable or able to act responsibly.



Texas Parks and Wildlife's game wardens enforce written laws. But, who enforces unwritten laws? All of us enforce unwritten laws. Just like peer pressure can encourage us to violate laws and ethics, peer pressure can help us act responsibly.

By being the role model, you will have the chance to influence your family, friends and others. You will have the knowledge to tell them what is right and what is wrong.

ALCOHOL AND DRUGS

It's important that hunters and other outdoorsmen make responsible, ethical choices about **alcohol** and **drug** use. This includes drinking or using drugs before, during and while driving home after hunting.

Responsible, safe hunters never go afield while they're intoxicated or **under the influence** of alcohol and drugs. They don't hunt with people who do.

Alcohol blocks most or all of the body's abilities needed to be a safe, ethical and successful hunter. Below is a list of some of the body functions affected by alcohol:

1. fine motor control (**marksmanship**)
2. judgment (safe zone-of-fire, background, foreground)
3. hearing (locating game or other hunters; other people)
4. color perception (game identification)
5. reaction time (quickness)
6. vision (game identification, safe zone-of-fire)
7. coordination (aiming, muzzle control)

Hunters need to be in good physical condition. Alcohol can ruin good health, on a long- and short-term basis. Alcohol can make walking difficult, perhaps endangering yourself and your hunting companions. It can also impair your ability to cope with life-threatening situations or to rescue a fellow hunter who is in danger.

Judgment and reasoning abilities are reduced long before a person realizes he or she has had too much to drink. Distinguishing what makes sense and what doesn't after a few drinks becomes difficult. Many prescription drugs can have the same dangerous effects.

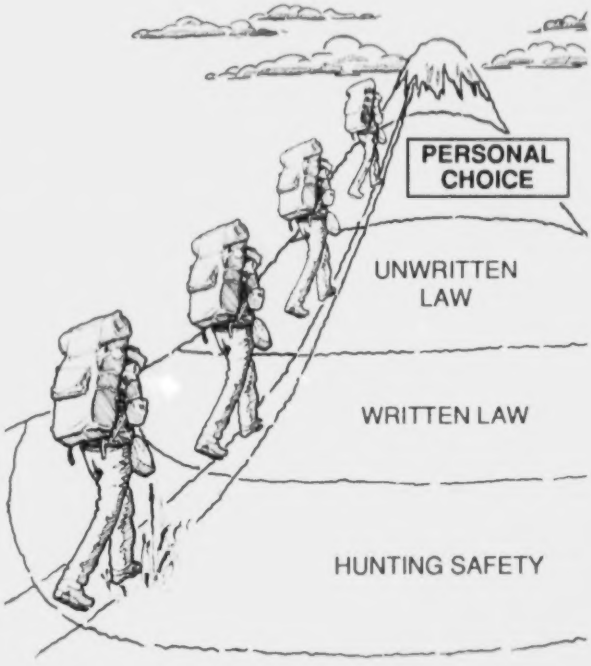
Drinking hunters leave a bad impression on landowners. Finding good land for hunting is sometimes difficult. A hunter who causes property damage, leaves beer cans and other trash and shows no respect for the landowner can ruin another's chance of getting hunting permission or leasing privileges on the property.

PERSONAL CHOICE

The fourth step in the hunter's climb involves personal choice.

Hunters who follow safe, legal and ethical practices come to the level which allows them to make personal choices.

Your personal choices are influenced by many things. How and where you were raised; your experience with methods of hunting; traditions; and your understanding of conservation are examples of such influences.



41

When hunting, you find yourself making decisions which are not necessarily wrong or right. They are simply the result of your upbringing and what you feel personally is right.

Examples of personal choice are:

- Baiting deer with corn or protein pellets
- Hunting deer with dogs (where it is legal)
- Shooting birds on the ground or in trees
- Shooting from a vehicle/boat (within private boundaries or upon private waters)
- Shooting animals which are harmful or cause damage (when it is legal or with the proper licenses)

Whatever you decide, it must be legal and it should be ethical. Your intentions should be good ones.

Baiting deer is illegal in most states. However, in Texas baiting is a common practice and is accepted as a tradition in some areas. In the "Hill Country," baiting helps attract wildlife to certain properties and leases. It allows hunters easier access to a deer herd.

Hunting deer with dogs is a controversial practice which involves a pack of dogs "rounding up" deer so hunters are given a clear shot. This is mostly illegal except in states where there is a significant amount of swamplands and thick forests.

If a hunter's intent is to maintain a certain heritage, to gain a certain personal reward from running dogs to harvest game in an otherwise "tough" hunting situation, he or she may have every justification both legally and ethically to hunt that way. Local people accept the tradition. It doesn't offend most of them. At this point, hunting deer with dogs remains a personal choice for the hunter.

An adult hunter who has reached the "personal choice" level may allow his or her child to shoot a dove sitting in a tree. If the intention is to help the youngster develop marksmanship skills or confidence of getting a clean, accurate kill, then the personal choice may be acceptable and ethical. (Shooting game birds from trees during legal seasons with the proper license is a legal practice, but it may be unethical to most hunters not faced with the choice or intentions above.)

Hunting from vehicles or boats is legal for non-migratory animals within the boundaries of private property or upon private waters. Hunting from vehicles and boats might be acceptable if it is a legal practice and they act as blinds. Handicapped hunters also may use them legally and ethically. Note: Although some practices are legal and may be ethical for some, safety must be continually practiced, especially in vehicle and boat blinds.

Personal choices can result in unethical practices such as shooting beyond a hunter's effective range. The probable results of wounding and poor marksmanship do not benefit the resource or the image of hunters. Some personal choices, however, can instill ethics as well. A clean kill of a dove on a branch which builds a youngster's confidence does fall within ethical goals and might later develop an attitude for accurate, effective shots. Therefore, to succeed at this level hunters must make the right choices based on years of experience, or good judgment.

The most obvious personal choice of hunters is hunting itself. Some citizens, who do not believe in hunting would like to see your choice be eliminated. Hunters at the "personal choice" level understand the role of hunting and their role in it. They accept and choose hunting as an experience they would like to continue. They do not defend their choice, they rationally explain why they have chosen to hunt. Those that do not understand personal choice often react emotionally or irrationally.

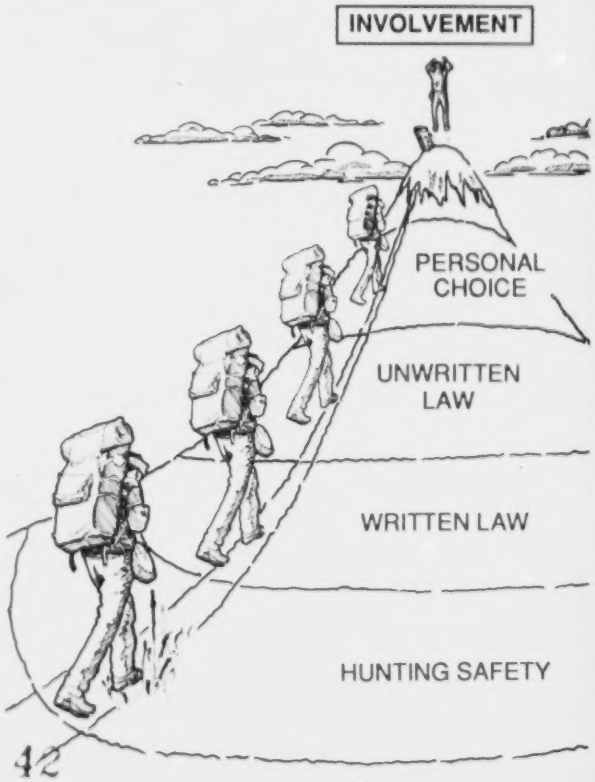
For example, **activists** who harass hunters because of their non-hunting beliefs or choices are doing so because of emotion, attitudes towards animals or their personal choice not to hunt. In most states harassment is illegal. This means that you do have rights to enjoy personal choices or freedoms allowed by law.

INVOLVEMENT

The top of the mountain means involvement!

Involvement means obligation, cooperation and dedication. Obligation means duty. Sportsmen have a duty to make hunting a respected sport and to teach proper knowledge and skills to others. Cooperation means working and talking with each other, landowners, non-hunters and agency people such as game wardens. Dedication means working for a cause. A responsible and enjoyable hunting experience represents a true outdoor cause.

Adults have many ways to get involved. They can see that their families are safe, educated and have the opportunity to



learn how to be responsible. They can join conservation organizations dedicated to improving habitat and management efforts.

Youth can be involved by joining programs such as 4-H, Greenwings, Boy and Girl Scouts and outdoor summer camps. These programs teach responsibility, leadership and involvement. Youngsters can also get involved in wildlife projects in their local communities. They can encourage their teachers to lead classes on outdoor studies or on cleaning up a beach or roadside.

Doing something for wildlife doesn't have to mean only the wildlife you hunt. Hunters should think of non-game projects as well. Fortunately, hunter-supported programs have historically helped many non-game species. But more involvement is needed to see aggressive, productive wildlife management into the twenty-first century.

Good Hunter-Landowner Relations

HUNTER RESPONSIBILITIES: THINGS TO CONSIDER

1. To Oneself:

A. Education and training.
B. Physical fitness.
C. Hunting clothes.
D. First aid.
E. Basic survival preparation.
F. Knowledge of hunting area.
G. Outdoor equipment.
H. Vehicles.
I. Alertness, awareness.
J. Self-control.
K. Practicing on the range.

2. To Other Hunters:

A. Not making unnecessary noises.
B. Not wearing improper clothing.
C. Not hogging all shots.
D. Proper use of game call.
E. Not hogging game which is taken.
F. Not drinking alcohol or using drugs.
G. Controlling dogs.
H. Sharing work.
I. Not telling everyone about another's "hot" spot.
J. Not shooting someone else's game.
K. Companionship.

3. To the Landowner:

A. Getting permission.
B. Lease agreement.
C. Understanding landowner's problem.
D. Following directions or agreements.
E. Letting landowner know about problems.
F. Not making unnecessary noises.
G. Not disturbing landowner's sleep.
H. Landowner's property.
I. Landowner's equipment.
J. Sharing of game taken.
K. Helping landowner with chores.
L. Picking up all litter.
M. Not hunting too close to buildings or livestock.
N. Closing gates.
O. Crossing fences at the proper place (corner posts).

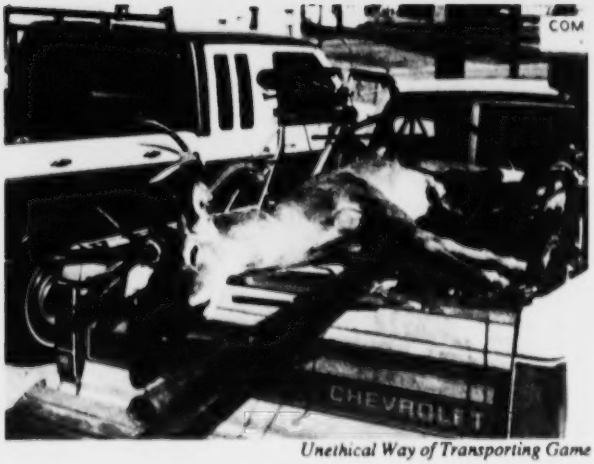
4. To the Resource:

A. Wildlife identification.
B. Fair chase.
C. Species protected by law.
D. General application of land and wildlife.
E. Stewardship (caretaker).
F. Proper care and use of game taken.
G. Working with conservation and management efforts.
H. Understanding and obeying laws.
I. Reporting hunting violations.
J. Not using animals for target practice.
K. Care for public lands.

5. To Non-Hunters:

A. Not displaying sporting arms or dead game in and on vehicles.
B. Not wearing smelly or bloody clothes in public places.
C. Not telling details about the hunt to those who are uninterested.
D. Not arguing with non-hunters.
E. Refusing to hunt with bad hunters.
F. Showing respect, courtesy and sportsmanship.

43



Unethical Way of Transporting Game

Landowner's complaints about hunters include the following:

- Hunters think landowners owe them free hunting.
- Hunters do not get permission to hunt.
- Hunters do not tell the landowners when they arrive or leave the property.
- Hunters make too much noise.
- Hunters leave litter on the property.
- Hunters carry loaded firearms in vehicles.
- Hunters drive off the ranch roads.
- Hunters leave gates open.
- Hunters shoot too close to neighbors or livestock.
- Hunters leave fires unattended.
- Hunters violate game laws.
- Hunters drink alcohol to excess.
- Hunters complain about poor success.

POINTS TO REMEMBER:

- Take a certified hunter education course to be sure you're up-to-date on both hunting skills and hunter behavior.
- Fully inform yourself about the fish and game laws in your state and pledge not to violate or "bend" them in order to increase your chance of success.
- Tell your hunting companions that you are concerned about the future of hunting and urge them to join you in assuring an "ethical" hunt this year.
- Take only the amount of game allowed. A limit unfilled by its owner does not entitle a friend to fill it for him.
- Call on the owner of the land you wish to hunt at least a month in advance of the season. Pledge to the landowner that you will respect his wishes. You might consider offering to help him with his chores or to share your game with him.
- Thank the landowner even if hunting permission is not granted. The impression you leave may well open the gates for you next year.
- Join an organized sportsmen's club or conservation group and urge that group to develop a code of hunting ethics for its members.
- Take the lead in calling for stiffer fines and penalties for game law violators and promptly report violations.
- Take a youngster hunting with you. Nothing brings out the best in us more than the opportunity to set a good example for the next generation.
- Most important of all, ask yourself if your hunting habits would have a positive or negative impact on the non-hunter. How would your hunt be received if the public were watching? If the answer is anything but positive, you need to break some old habits.

—Izaak Walton League of America

Shooting from vehicles is unsafe, unethical and many times illegal.

Hunters should pick up litter even if it is not theirs.

BEST COPY AVAILABLE

DEFINITIONS

HUNTING ACCIDENTS — accidents related to a person's actions while hunting

HUNTING ACCIDENT REPORT — reports filed by game wardens which gives the Texas Parks and Wildlife Department key accident statistics

TEN COMMANDMENTS OF SHOOTING SAFETY — what each hunter must understand and obey

ACCIDENT — unplanned, uncontrolled action

DAYLIGHT FLUORESCENT ORANGE — unnatural color designed to help hunters or other outdoor users be seen by other hunters

DECIBELS — the smallest variation in sound that a human ear can detect

LEGISLATURE — governing body able to make or repeal laws

FELONY — serious crime usually endangering a person's life

CIVIL RESTITUTION — added fine paid by violator to replace a civil wrong. In regards to TPWD, the amount it would cost to put illegally taken wildlife back in nature

ETHICS — what is morally right; a personal code which dictates what is safe, proper or fair

EFFECTIVE RANGE — range it takes a hunter to make a safe, accurate shot

ALCOHOL — intoxicating (excite beyond self control) element found in liquor, wine and beer

DRUG — substance which is a medicine, narcotic (sleep) or stimulant (excited stage)

UNDER THE INFLUENCE — impaired by alcohol or drugs

MARKSMANSHIP — safe and accurate shot placement from sporting arms

ACTIVISTS — people working for a cause; some work so much for a cause that they perform illegal actions to make their point

CHALLENGE

- Talk to a legislator in your district. Find out from him or her how laws are passed. Ask what experience he or she has had with Parks and Wildlife regulations. Ask his or her opinions on hunting and firearms.
- The next time you are faced with a difficult shot at a game animal—pass up the shot! Try to move closer, let the animal move closer, or wait for another angle or opportunity.
- Talk to a non-hunter. Explore their feelings about wildlife, the environment and why they choose not to hunt. Write down their attitudes about hunters and why they like or dislike hunting.

EXERCISES/REVIEW

DILEMMA EXERCISES: Hunting Dilemmas are situations which face all hunters. When faced by a dilemma, the hunter must choose the correct action to take, sometimes in an instant. The most crucial dilemma is whether to pull the trigger or not. If you do, and you make the wrong choice, it could cause injury or death.

Legal dilemmas are those which need action based on the written hunting regulations.

Ethical dilemmas give a person a choice from many possible actions. What is morally correct or intended should be the decision.

1. SAFETY DILEMMA —You are hunting quail. You and your companions just flushed a covey and are now heading towards the spot where a few landed. You are in the middle and one companion is on your right. The companion on your left disappears behind a thicket. Suddenly, three quail explode from in front of you. Two quail head toward the thicket to your left. One flies towards an area in front of the companion on the right. You would:

   A. shoot at one which flew left
   B. shoot at one which flew right
   C. not shoot

2. LEGAL DILEMMA—You are blood-trailing a deer that you shot two hours earlier. You look up ahead and see the blood trail cross onto posted property on which you do not have permission to hunt. Both trespassing and game waste are illegal in your state. You know that the deer could not go much farther. It starts to rain. You would:

   A. go into the posted property
   B. attempt to reach the landowner
   C. attempt to reach the game warden
   D. consider that you made every effort and leave it go

3. ETHICAL DILEMMA—You are invited to go deer hunting with some friends you haven't seen for quite some time. Everything about the hunt went well. Things were done legally and two of you were even successful in bagging deer. All of you are getting ready to leave to go back home. You have already legally quartered and packed your deer in ice. You look over to notice your buddy tying his trophy buck's head on the top of his van. It resembles a large hood ornament. You hear him telling your friends how proud he is of the deer. At that moment, you ask him if he is going to cover the head. He replies, "Heck no—I'm going to show it to the world...."

   Knowing you might not be invited back if you cause ill-feelings, you would:

   A. Smile and remember your own success wondering if you should do the same with your buck's head.
   B. Talk to your friends about why it wouldn't be such a good idea and to cover or bag the head so it doesn't show.
   C. Ignore it since you are travelling a separate direction home.

Questions:

1. What do the 4 C's of ethics stand for. Briefly describe what each one means to you.
   C- _____ - _____
   _____
   C- _____ - _____
   _____
   C- _____ - _____
   _____
   C- _____ - _____
   _____

2. List the five levels of the hunter's climb up the mountain of responsibility.
   A. _____
   B. _____
   C. _____
   D. _____
   E. _____

3. List the four types of hunting accidents and give several examples of each.
   A. _____ - _____,
   _____
   B. _____ - _____,
   _____
   C. _____ - _____,
   _____
   D. _____ - _____,
   _____

HOME STUDY

Young Hunters—Ask your parents to give you examples of unethical actions by members of society, such as in your community, parish or in current events. Then, ask them to compare their answers to unethical actions by hunters (show them the list of considerations in this section). What is the result of unethical actions by hunters?

HELPFUL REFERENCES

Izaak Walton League of America—Outdoor Ethics Program, 1701 N. Ft. Myer Dr., Suite 1100, Arlington, VA 22209, brochure available about organization; publishes outdoor ethics newsletter.

National Rifle Association—Miscellaneous safety and ethics brochures and leaflets, 1600 Rhode Island Ave., N.W., Washington, D.C. 20036.

National Shooting Sports Foundation—Miscellaneous safety and ethics brochures and leaflets, P.O. Box 1075, Riverside, Connecticut 06878.

Texas Parks and Wildlife Department—Current hunting accident statistics, "ten commandments" of shooting safety, hunter education program information, stop poaching information and hunting/fishing regulations. (Statistics are available from Austin headquarters only.)

5 MODERN FIREARMS
...Understanding the Basics

OBJECTIVES

- To give you a firm understanding of the right and wrong ways to handle and care for modern-day firearms.
- To review the basics of firearm and ammunition parts and functions.
- To allow you to demonstrate safe skills when handling firearms (handling, field and/or live-firing exercises as provided by the instructor).
- To review rifle, shotgun and handgun shooting fundamentals.

Handgun with trigger lock.

SAFETY

AT HOME

Statistics indicate that there are more than 2,000 fatal firearm accidents each year. More than half of these accidents happen in homes. If you practice the rules of safe gun handling taught in the Hunter Education course, you are unlikely to ever be involved in such an accident.

Many people who are not shooters, especially children, are exposed to firearms in the home. Since almost all accidents are caused by carelessness and lack of knowledge, it's the hunter's duty to help prevent firearm mishaps in the home.

Not all people who own guns are hunters. Some people collect guns such as antiques. Some own several different types of firearms for target shooting. Others keep firearms in the home for protection. There are people who don't even know how to use the firearms which they own, and some of their guns are kept loaded.

If a gun is taken from storage to show to friends, be sure they understand safe gun handling rules such as handling guns only by the stock. Perspiration from hands may contain enough salt to damage gun metal. If metal parts have been handled, the gun should be immediately wiped with an oiled or silicone-treated cloth before replacing it in storage.

While cleaning a gun at home, continue to treat it as if it is loaded. Always point the muzzle in a safe direction and remove the magazine. Double check to make sure no ammunition is in the chamber or magazine. Clean barrels from the breech or back end when possible.

IN STORAGE

Safe gun storage is very important. The ammunition must be removed and the action opened before the firearm is taken indoors. The gun must be stored dry. Damp guns should first be wiped with a dry cloth to remove most of the moisture. The gun should then be properly cleaned, lubricated and stored in a cool, dry storage unit—never extreme heat.

Keep firearms locked up and separate from ammunition.

17

Many rifles and shotguns are stored upright in cabinets or closets. In this position, gravity pulls the oil downward. For this reason, thin gun oils are not ideal to use on stored guns. They drain downward into the action and form a sticky film inside. This leaves the upper parts of the gun unprotected from rust. Gun oils can also stain and soften wooden stocks. The best protection for guns stored upright is high quality gun grease that spreads thin and filmlike. It is best to store guns horizontally (laying down) or with the muzzle pointing down.

Guns should be stored out of reach of children—always unloaded and uncocked. The gun and its ammunition should be kept locked in separate places.

IN TRANSPORT

Transporting firearms from the home to the range or field involves both legal and safe practices. There are state and federal laws which tell you how and under what conditions you can carry or transport firearms. In Texas, these laws are contained in the **Texas Penal Code - Chapter 46, Weapons**. You can obtain a booklet from the Public Information Office, Department of Public Safety, or a digest of these laws by writing or calling the **Texas State Rifle Association, P.O. Box 710549, Dallas, TX 75371; 214/369-TSRA**. The digest is entitled "**Know Your Texas Firearm Laws.**"

Firearms should always be unloaded and cased before transporting them in vehicles. Remember, in many states, this may be the law. The action should be open or the gun broken down, whichever makes it safest if mishandled. You should be able to see that it is unloaded by sight whenever possible. Firearms should not be displayed in window gun racks because of public image or theft problems.

Firearms in vehicles travelling on private land should also be unloaded. From section four of this manual you learned that it is unethical to hunt from a vehicle even though in some cases it may be legal. However, there are vehicles which are made to hunt from in Texas. If you choose this method of hunting, be sure the vehicle is parked before loading your firearm. Then, the vehicle acts like a stand. Physically handicapped hunters may also prefer to hunt from such a vehicle. The same safety rules apply. Chasing game with vehicles is unsafe and unethical. It ruins your claim to responsibility.

Safely putting firearms back in vehicle.

When transporting firearms in boats, you must follow the same safety logic as with hunting vehicles. Unload firearms, open their actions and put them in a case. If legal, make sure you are stationary (anchored) or beached firmly before loading or shooting when sitting in a boat. Never stand and shoot from a boat.

Never lean a firearm against an insecure rest such as a vehicle, a duck blind, or a stand or a tree, whether it is loaded or unloaded. A gun which falls over might accidentally discharge or be damaged.

IN THE FIELD

Safety in the field involves the same safety rules. However, hunters may be influenced by more factors including:

—Environmental factors such as weather, daylight and the sun's glare
—Location of your companions
—Locations of other hunters, landowners or non-hunters
—Ignorance of where other people are located
—Emotions such as fear, surprise and excitement
—Judgment, quick hasty decisions
—Colors of garments, shapes of objects
—Determination of safe backstop or background
—Distances bullets, slugs or shot travels
—Blind situations
—Animals such as fire ants, snakes and bees
—Stamina it takes to endure some hunting conditions

As a sportsman, be sure you **plan your hunt** with your companions, then **hunt your plan**. Stay alert at all times. As excited as you might get, try to contain your emotions so that you make good judgments. Never drink alcohol or take drugs prior to or during your hunt in the field. Be sure of your target. All the commandments of safe shooting apply to field situations. Follow them!

SAFE ZONE-OF-FIRE

People hunting together should agree on the area each shooter will cover before they start. This is particularly true of groups hunting birds, rabbits or other small game. If there are three hunters walking side by side hunting pheasants, the hunter in the center will shoot at birds flushed in the middle which fly straight away or nearly so. The other hunters will shoot at birds flying toward their end of the line. If a bird turns and flies back across the line of hunters, it's best if all three hold their swings and do not fire. The same is true of a rabbit scurrying back between the hunters. No hunter, especially when swinging on game, should allow his or her gun to point at a person. It's far better to pass up a shot than to risk injuring someone or damaging property.

A hunter's zone-of-fire changes with every step. It is important for those hunting in a group to remain alert and in contact, so each person knows where the others are. Everyone hunting in these situations should wear daylight fluorescent orange whether it is required by law or not.

TARGET IDENTIFICATION

Hunters must shoot only when they know the target is legal game and that no people, domestic animals, buildings or equipment are in the zone-of-fire. Shooting too quickly is dangerous and causes missed shots. Slow, careful shooting will allow better success and, more importantly, positive target identification. Never shoot until the entire target is clearly visible and you can be sure what is behind and in front of the target. A rifle scope should never be used as binoculars.

SELF-CONTROL OR RESTRAINT

Hunters naturally concentrate on getting game. Even experienced hunters may become overly excited or worried about actually bagging animals. All of their senses are focused on locating and bagging game. Every sound, even the slightest movement, catches their full attention. Hunters must be able to control themselves and never shoot at sounds or movements, no matter how excited they get. A hunter who becomes excited and shoots too quickly can cause a deadly accident.

By handling guns properly at all times and waiting to see the game clearly, hunters develop **self-control** as a habit. That habit must rule their behavior when they become excited in the hunting field. People who handle guns must be alert and practice self-control at all times.

ACCURACY

Hunters must be able to shoot **accurately**. The safety of others depends partly on the hunter's ability to hit the target. Some accidents, often deadly ones, have occurred when stray bullets have hit people out of the shooter's sight. Safe hunters never take careless shots in the general direction of a target. Hunter's knowledge of their equipment and their ability should tell them when shots are clean and a kill is possible.

Hunters must use self-control to shoot accurately. Good sportsmen depend on accurate shooting to make clean kills. No real sportsman wants to wound game and cause it to suffer. Hunters must learn how to hit the **vital organs** of the game they hunt. Shooters must also be aware that bullets may pass through targets or game and travel far beyond with deadly energy.

STATES WITH LAWS REQUIRING HUNTER ORANGE (Shaded)

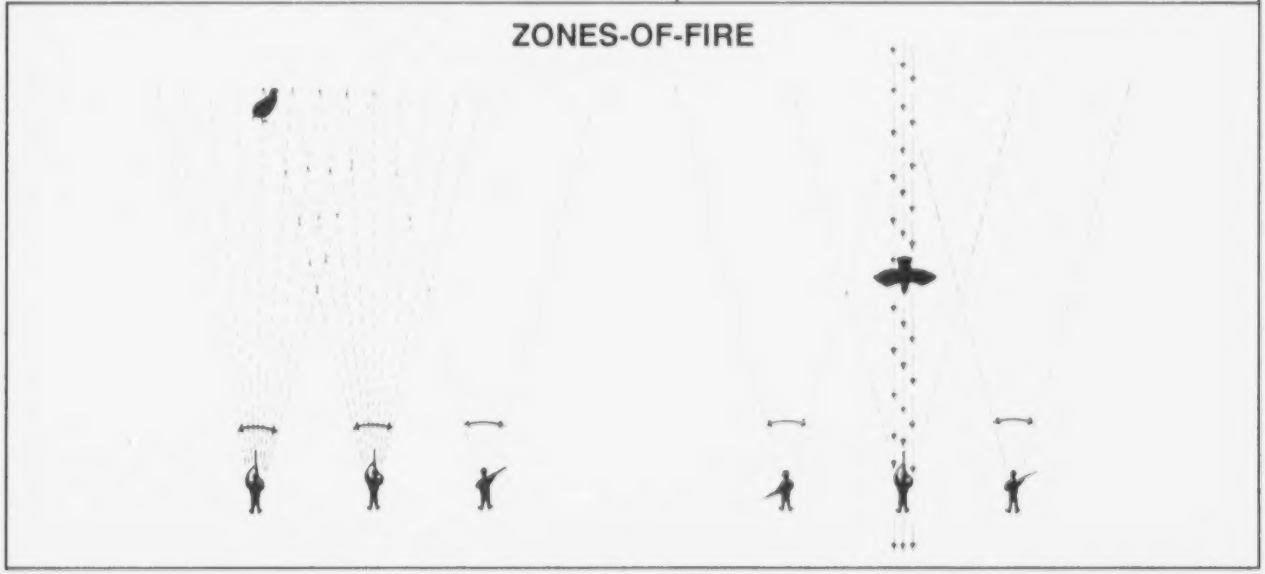
***As of Jan. 1990**

(NOTE: Before hunting, be sure to read the most current hunting regulations of that particular state.)

Canada Provinces:

Saskatchewan
Manitoba
New Brunswick
Nova Scotia
Quebec

ZONES-OF-FIRE



Sling Carry

Two-Hand or Double-Hand

Trail Carry

Elbow Carry

Shoulder Carry

Cradle Carry

54

FIELD CARRIES

There are many ways to carry a gun so it isn't a threat to the shooter or other hunters, yet is ready for quick use. Muzzle control is most important. One good method is to grip the small of the **stock** in the trigger hand and cradle the **forearm** in the crook of the other arm. Probably the best way to carry a gun—because it gives better control of the muzzle—is to hold the forearm in one hand and the small of the stock in the other. This is called the two-hand carry. The familiar shoulder carry is also used, in some situations, but does not allow complete muzzle control.

These rules apply to all carrying methods: 1) **safety** "on" until immediately before you are ready to shoot, 2) finger outside the **trigger guard**, 3) muzzle in a safe direction and under control.

If three hunters are walking single file, the one in the lead should have the gun pointed ahead, but never over the shoulder. The one in the middle must have the gun pointed to the side, and the one in the rear would be safely carrying the gun if it is pointing to either side or rear.

If three hunters are walking side by side, the ones at the sides may carry their guns pointing either to the side away from their party or to the front. The one in the center should keep the gun pointing to the front.

Always unload your gun before crossing fences or other obstacles—even unsure footing. After unloading, place the gun on the other side of the fence or obstacle to be crossed, with the muzzle pointed away from the point where you will cross. You can also let someone else hold your gun during fence crossing. Never pull a gun toward you by the muzzle.

AT THE RANGE

Range safety is just as important as hunting safety. All hunters should visit their local range. With permission, hunters may set up a safe range at their year-round leases. Local ranges should have built-in safety features such as berms, baffles, shooting lanes and adequate fall-out zones or backstops. **Berms** are hills of dirt behind and to the sides of shooting lanes, especially when shooting large-bored guns. **Baffles** are usually overhead and side structures which are designed for safety, especially in the case of errant shots upward or sideward.

A **fall-out zone** for shotguns is that vacant down range area where pellets can safely fall no matter what the angle of the shotgun. Typically it is 300 yards or more.

Since a large bore bullet can travel as far as 3 1/2 miles and a .22 caliber bullet 1 1/2 miles, shooting ranges should have baffles and berms to catch shot bullets, stray shots or even ricochets. Hunting leases should have solid dirt hillsides or cut-out banks for range backstops. Only your family, lease partners and the landowner can decide what is safe and where you can safely sight-in your rifles on a lease during the off season.

Proper Field Carries

The National Rifle Association does have a range safety manual of specifications which might help you determine what safe shooting facilities look like. The Texas Parks and Wildlife Department in cooperation with the U.S. Fish and Wildlife Service provides funding to Texas citizens or gun clubs should they be interested in improving or building shooting ranges open to the general public. Call the Austin headquarters, toll free, 1-800-792-1112 or call (512) 389-4999.

"Crossing Fence Safely"

BEST COPY AVAILABLE

Range safety rules include many of the safe shooting commandments. But if you plan to shoot at a range make sure you take some extra precautions:

—Read all range rules as they apply to the type of shooting you will do that day.

—If there is a range master, be sure to follow all of his or her instructions while shooting. When not shooting, be sure to unload your firearm and leave it on the range line or bench until you are given further instructions.

—Do not touch or tamper with your firearm while other persons are down range. Be sure to back off of the firing line or bench until the range is clear and the range master instructs you to approach the line or bench.

—If there is not a range master, be sure to communicate clearly to others regarding instructions and range commands. All shooters must decide on the safe commands beforehand so it is clear when someone decides to stop firing and goes down range. Any time a person is beyond the firing line and down range, you must always unload your firearm and back off of the line until the other person returns.

—Under no circumstance should you shoot a firearm when someone is down range of the firing line or past the plane of the firing line to the left or the right.

—Always wear hearing and eye protection even if you are watching others shoot.

—Never use the wrong size ammunition and/or ammunition which you did not personally reload yourself.

—Never should there be any horseplay at the range. If there is a competition or fun shooting game going on, always conduct yourself with safety as your first thought. Never take a shot if it has the slightest chance of being unsafe. This is especially true if you are shooting at an area other than a safe shooting facility. Remember, only the shooter can make a range totally safe by following all safety rules, exercising good judgment, sticking to the safe shooting zone, and always pointing their muzzle in a safe direction.

Range commands are intended to keep you safe. The first command a range master might give is, "SHOOTERS TO THE LINE." This means if you plan to shoot or are shooting in a competition, that you can approach the line or bench. The next command might be "SHOOTERS TAKE POSITION" followed by "YOU MAY LOAD YOUR FIREARMS." The range master then asks, "READY ON THE LEFT?" followed by "READY ON THE RIGHT." If a "yes" answer is given by all shooters, then the command, "COMMENCE FIRING" is given. You then shoot your rounds until you see an unsafe situation, have a misfire or problem or hear the command "CEASE FIRE" (if it is the first two cases, notify the range master immediately so he or she can give the command). Be sure to keep the muzzle pointed down range (or in the safest direction) in case you have a misfire or other problem.

If you ever hear the command to cease fire, unload immediately. Leave the action open with the muzzle pointing down range. Back off of the firing line or bench. Do not approach the line or bench again until the command "APPROACH THE LINE" is given.

There may be other circumstances of which the range master might not be aware. Be sure to communicate any unsafe situation to another shooter, to all shooters or to the range master whenever it arises. It could be that a trespasser is down range, a particular safety feature breaks or someone's gun has misfired.

VISION AND HEARING

Vision and hearing are two of our most valuable physical features. Once we lose them, it is likely we will never get them back.

Shooting involves gases and noise, both of which can be damaging to our eyes and ears. Protect your eyes and ears at all costs by wearing vision and hearing protection.

For vision, standard shooting glasses or prescription glasses should be worn. For hearing you have the option of wearing molded plugs or aids, regular plugs made of foam, rubber or other synthetic material, hearing muffs or head covers, or a combination of plugs and muffs.

When hunting, there are times when glasses might shine. There are also times when you need to hear your companions either for safety reasons or in a survival situation. Therefore, vision and hearing protection is only recommended. But remember, you only have one set of each. Try to compromise in hunting by wearing reduced shine glasses and hearing products which reduce certain levels of noise while allowing you to hear your companions.

Vision and Hearing Protection

FIREARM SAFETY

In this section and throughout your experiences, you will be able to handle or view a lot of firearms. Each firearm has its own particular molds and working pieces. This is especially true with custom-made firearms which are truly one of a kind.

Remember not to handle a firearm when you are not sure if it is loaded or unloaded. Let an experienced person or owner show you how the action operates. You should never be afraid or embarrassed to admit you do not know how a firearm works.

It is a lot easier to ask what you think is a stupid question than it is to make a mistake or have an accident. You can live through embarrassment. You might not live through an accident.

You should never replace safe firearm handling by trusting the safety on a firearm. A safety is a device which prevents a firearm from firing until the safety is released or pushed to the "off" position. A safety is a mechanical device which could fail.

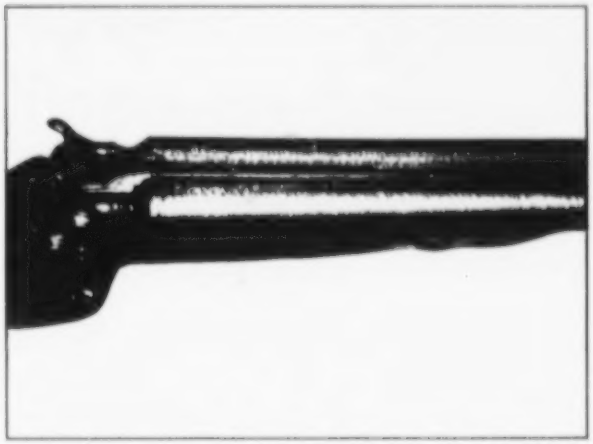
Knowing where the safety is and how it works is not always as simple as it might seem. There are hundreds of types of safeties. For example, there are push buttons, hammer cocks, levers, catch and slide safeties. There are grip safeties, transfer bars, firing pin and trigger block safeties. Sometimes persons alter or modify their guns so there isn't a safety. This is a dangerous act, especially if the gun gets into the hands of an inexperienced shooter. Be sure you know how the safety works on your gun. Never alter or modify your firearm yourself. If something is wrong or the safety does not work, have an experienced gunsmith look at it.

THE DAMASCUS BARREL

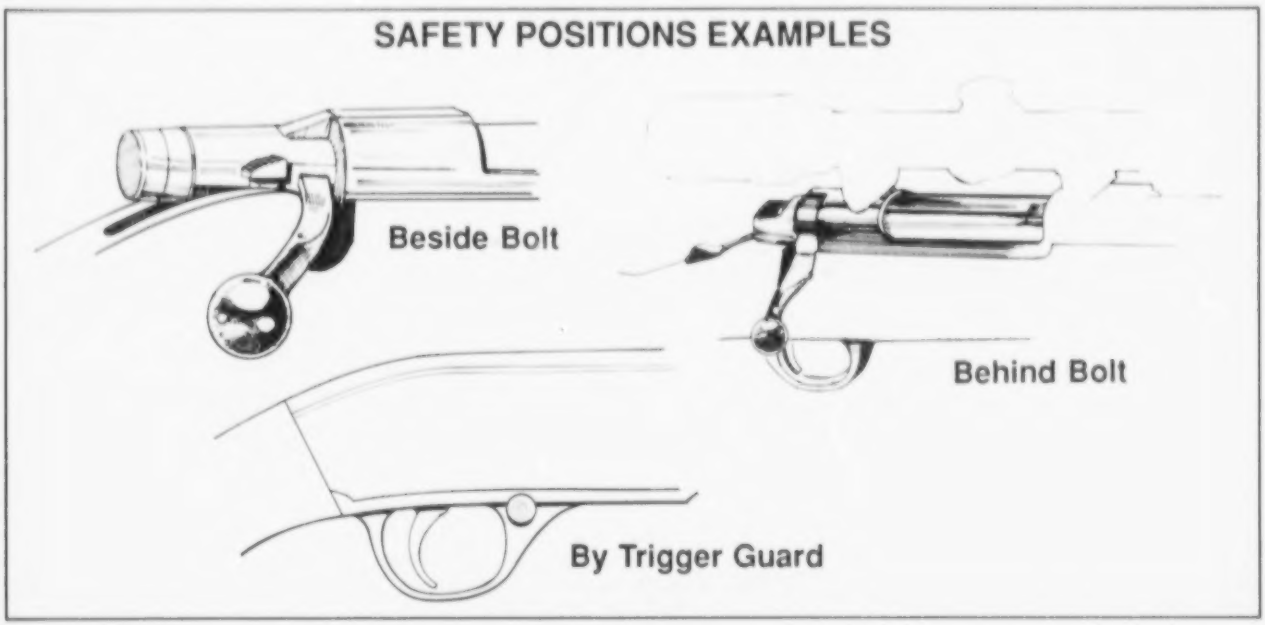
Damascus Barrels or "damascus twists" are older or custom-made barrels which were typically made before the turn of the century.

Welded iron and steel ribbons were twisted around a mandrel and welded together. They are weaker than modern barrels made of rolled or drawn steel. They are not designed for the high pressures created by modern-day ammunition. If you have a damascus barrel gun, do not shoot it with modern-day ammunition. In fact, you should save it as a collector's item.

If you have an older firearm and are not sure if it has a damascus barrel, make sure you take it to a qualified gunsmith. A gunsmith should be able to give you the make and worth of the gun.



Damascus Barrel



(from upper left) Airguns: CO2 Pistol, Two Spring Action Rifles, Pneumatic Pistol

AIRGUNS

Airguns are the best firearms with which to teach beginning hunters the fundamentals of safety and shooting. They are relatively inexpensive as is the ammunition they shoot. Modern airguns look and feel like larger caliber firearms. They have many of the same designs, parts and sights larger calibers have. Most importantly, airgun ranges can be set up in many places such as school gymnasiums and even in the home. However, just like with any range, the shooter must follow all the safety rules which apply to any firearm and range set-up.

Airguns were introduced centuries ago. Some of the earlier firearms propelled bullets using chambered or forced air. Before that, humans used their own air to blow darts which could kill large animals.

Modern airguns fall into three major categories based on their design and moving parts (actions).

PNEUMATIC

Pneumatic airguns use a pump system which forces air into an enclosed chamber. The system is similar to the one used to pump or fill up a tire, ball or raft. The amount of air in the chamber depends on how many times the shooter pumps the gun.

The pump is actually a lever which forces a slide back and forth. The movement allows a plunger or similar device to collect air and push it into a chamber. The air is retained in the chamber by a device which allows the air to go only one way — in.

When the trigger is released the compressed air drives the pellet or BB out of the barrel. The more times the shooter pumps, the faster the pellet or BB can travel. The shooter has the option of having extra power by the number of pumps given to the system. Be sure to control your pumping action so the muzzle is always pointed in a safe direction.

Supervise your youngster's activities around airguns and larger firearms. Airguns are not toys. They can be just as dangerous as larger firearms.

CO_2-POWERED

CO_2-powered or gas-powered airguns use compressed CO_2 contained in a steel cylinder. The cylinder attaches to a chamber inside the air rifle or pistol. When the trigger is squeezed, a valve releases a quantity of CO_2 which propels the pellet or BB.

CO_2-powered airguns are favored by competitive shooters because of the power. Shooters also do not use a lot of energy pumping up a gun and can concentrate more on technique.

SPRING

Spring airguns involve a spring which is compressed by a lever. When you squeeze the trigger, the spring is released. The spring thrusts a plunger forward. The plunger pushes a compressed column of air through the barrel, driving the pellet or BB out.

One cock of the lever is all it takes to prepare a spring airgun for firing. The spring is also called the spring-air system. It can be used by shooters of all ages much like the pneumatic.

AIRGUN AMMUNITION

Modern airgun ammunition comes in two main styles - pellet and BB. Pellets are cylinder-shaped and usually have a solid end and one hollowed out end which catches the air from the airgun system. The smooth, pointed or flat end of the pellet faces the muzzle or front end when sitting in the chamber.

BB's are round and are like ball bearings (hence, the name BB). The rounder the BB the truer it will shoot.

Pellets and BB's are made of lead, copper or are copper-plated. The main size of a pellet or BB is .177 caliber (.177/ thousandths of an inch in width diameter). However, there are other sizes such as .20 caliber and .22 caliber depending on the airgun.

Common Airgun Ammunition

Airgunning is a rewarding sport because it can be enjoyed by all ages year-round and for a lifetime. There are olympic sports using airguns. Airguns help the beginning hunters practice indoors and fine-tune their skills by the time the season rolls around.

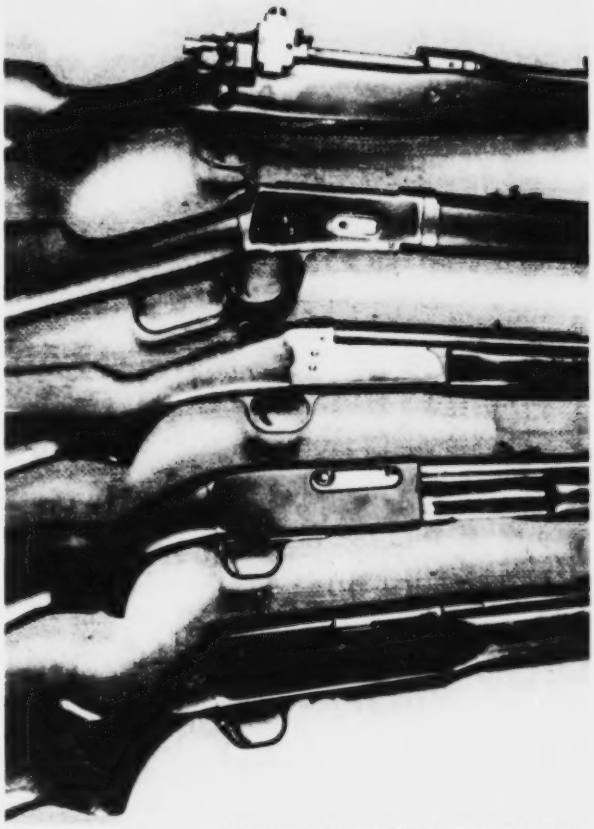
RIFLES AND SHOTGUNS

Firearms safety begins with a study of how guns work. Modern guns including **rifles** and **shotguns** use expanding gases from burning powder to force a bullet or shot out of the **muzzle**. Different types of hunting guns use different **ammunition**. Each type of gun has its own purpose.

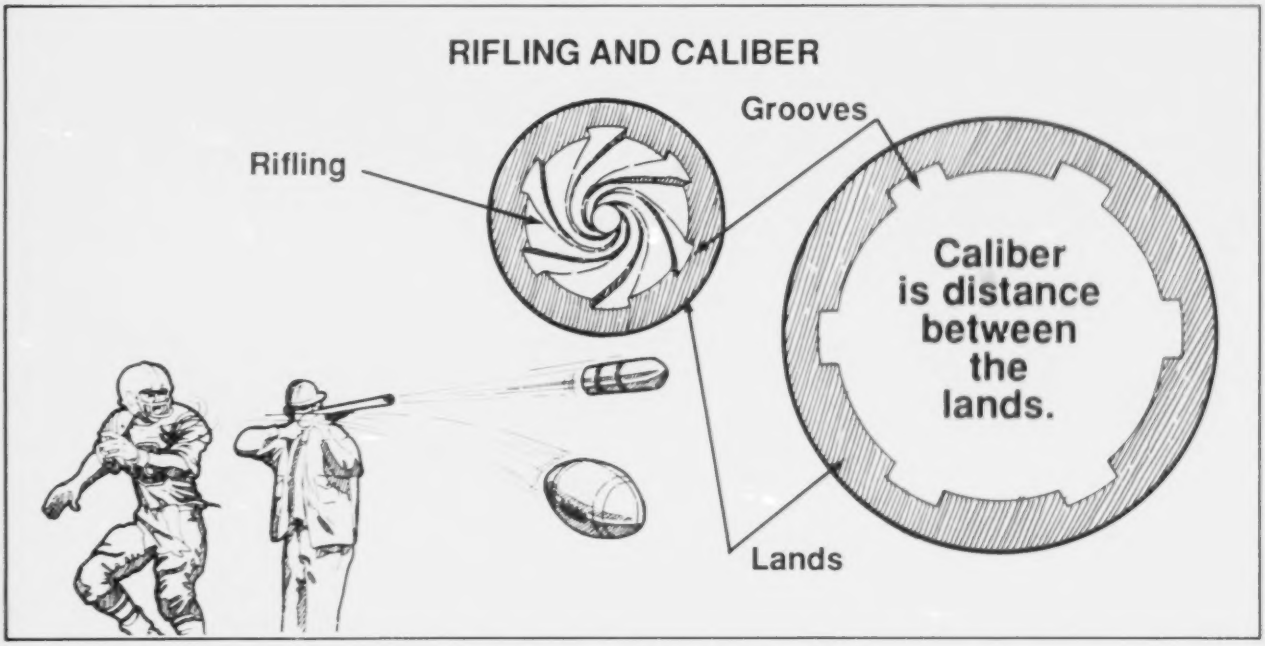
Pellets fired from a shotgun might not harm a person 500 yards away. A rifle, including a .22, can be deadly at more than three times that distance. A shotgun, however, is just as dangerous as a rifle at shorter ranges. Statistics show that most shooting accidents happen at short ranges, so all guns—including airguns—must be used with the same care and responsibility.

Rifles and shotguns operate in much the same way. The main difference between a rifle and a shotgun is found inside the **barrel**. The shotgun barrel is relatively thin and its **bore** (inside surface) is smooth. Rifle barrels have thicker walls and grooves that spiral around the bore. The grooves are called **rifling**. The rifling spins the bullet, keeping it point first in flight and increasing accuracy and range.

The **caliber** of a rifle is determined by measuring the width of the bore. The measurement is usually from the top of a ridge between rifling grooves to the ridge on the opposite side.



(from top to bottom) Rifle Actions: Bolt, Lever, Break-Open, Pump, Semi-Automatic



Caliber is usually given in hundredths of an inch. It also can have a metric measurement in millimeters such as a 6mm or 7mm.

Shotgun sizes are given in **gauges**. Gauge measurement actually came from an old formula which involved lead balls the size of the bore equalling one pound. Today, however, gauge can be measured much the same way as a caliber by measuring the inside bore diameter.

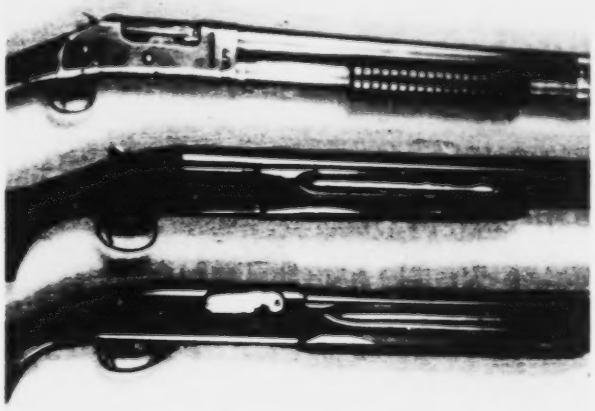
Each gauge of shotgun shoots only shells of the same gauge—12-gauge shells are used only in 12-gauge guns, for example. The gauge of a shotgun is usually marked on the rear of the barrel, and the gauge of a shell is always marked on the shell as well as on the factory box. Note: Reloaded shells may have wrong information. It is important that reloads be clearly marked and used only by the person who reloaded the shells or cartridges.

WARNING: 20-gauge shells, if mistakenly fed into a 12-gauge gun, will slip past the chamber and lodge in the barrel, causing serious personal injury or gun damage if a 12-gauge shell is fired in the gun. Some rifle and handgun ammunition also may fit into the wrong gun, creating a dangerous situation. The caliber or gauge stamped on the end of the shell must match that stamped on the gun barrel. Some are not stamped. Be sure the right ammunition is used in your gun.

Rifles and shotguns are usually identified and named by their bore sizes and **action** designs. The action is the part of the gun that moves cartridges or shotshells into the chamber. It is the working parts which loads, unloads and ejects ammunition.

The action moves the ammunition from the **magazine** to the **chamber**. Magazines come in many forms such as clips, boxes, tubes and cylinders. They are designed to hold extra cartridges or shotshells which can be fired in turn.

The chamber holds the cartridge or shotshell able to fire. It is an enlarged area in the bore at the breech end of the barrel. The chamber conforms to the shape of the ammunition. In the case of a shotshell it provides an added space which allows the crimp to expand outward during the shooting process.



(from top to bottom) Common Shotgun Actions: Pump, Break-Open, Semi-Automatic

A popular rifle or shotgun is the single-shot. It is the rifle or shotgun into which a single cartridge or shell is loaded by hand. The double-barrel is simply two single-shot barrels joined side by side. The over-and-under is two barrels joined one on top of the other. Single-shot rifles are usually **bolt** or **falling-block** actions. Single-shot shotguns usually have **break-open** actions. Repeating rifles and shotguns include the **lever**-action, bolt-action, **pump**-action and **semi-automatic** types. Operating the lever, bolt or forend ejects the empty shell, chambers a fresh round and cocks the gun—all at once. Some firearms have both rifle and shotgun barrels in a combination form or interchangeable barrels.

So-called automatic hunting guns are actually semi-automatic or self-loading. Chambering fresh rounds is automatic, but it is necessary to load the gun and chamber the first round and pull the trigger for each shot. True automatics, such as machine guns, continue firing as long as the **trigger** is held back and the ammunition lasts. They are not legal for hunting purposes.

The stock, usually of wood, serves as the handle and to hold the gun next to the shoulder. The barrel is the metal tube through which the bullet or shot pellets are pushed by expanding gases. The action (lock), stock and barrel are the three main components of any firearm.

Break action—

In break-action guns, cartridges or shells are loaded by hand into the chamber. They are extracted and ejected either manually or automatically when the action is opened. Break-actions include both double- and single-barrel guns.

Pump action—

In pump-action guns, cartridges or shells are fed from the magazine into the chamber, and ejected as the shooter pumps the forend, back then forward.

Lever action—

Lever-action guns use the movement of a metal handle under the stock to operate the extractor and ejector and cock the hammer. The lever must be moved down then back up for each shot.

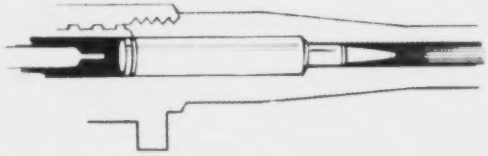
Semi-automatic action—

In autoloader, or semi-automatic guns, the first cartridge or shell is fed from the magazine as the shooter loads the magazine and operates the action by hand. The automatic mechanism then ejects the first shell after it has been fired. It continues to feed fresh rounds into the chamber after each shot, using **recoil** or expanding gases to move the action parts. Recoil refers to the kick, or rearward push, of a gun when it is fired.

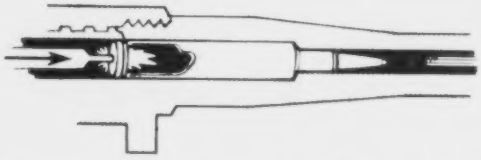
Bolt action—

Most bolt-action guns require the shooter to move a lever or bolt up, back, forward, then down in order to eject a spent cartridge or shell and chamber a fresh round. This must be done for each shot. The bolt-action is probably most popular among rifle shooters.

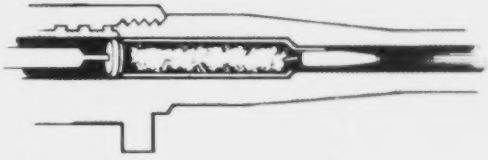
WHEN YOU PULL THE TRIGGER



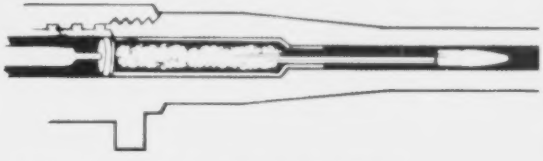
Cartridge in chamber



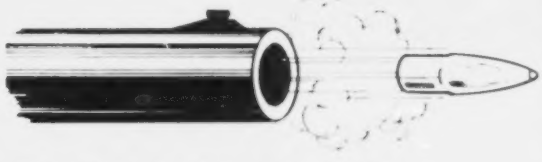
Firing pin strikes and ignites primer which in turn ignites powder



Gas from burning powder expands in case



Gas pushes bullet out with force



Speeding bullet and escaping gases from barrel cause "bang."

DOMINANT OR MASTER EYE

Your **dominant eye** is the one you should look through when sighting. If you're right-handed, you are likely right-eyed. When shooting a rifle or shotgun, right-eyed persons should place their right cheek on the stock and sight down the barrel with their right eye. Left-eyed persons, of course, place their left cheek on the stock. No matter which of your eyes is dominant, you should shoot shotguns with both eyes open. However, there are many shooters who must close an eye or develop their own technique because of a cross-dominant situation. Some hunters also keep both eyes open while shooting rifles, especially using open sights.

You can find out which of your eyes is dominant by forming a triangular opening with your thumbs and forefingers. Focus on a distant object while looking through the triangular opening with your arms outstretched. Slowly bring your hands to your face, keeping sight of the object through the opening. The opening will naturally come to your dominant eye.

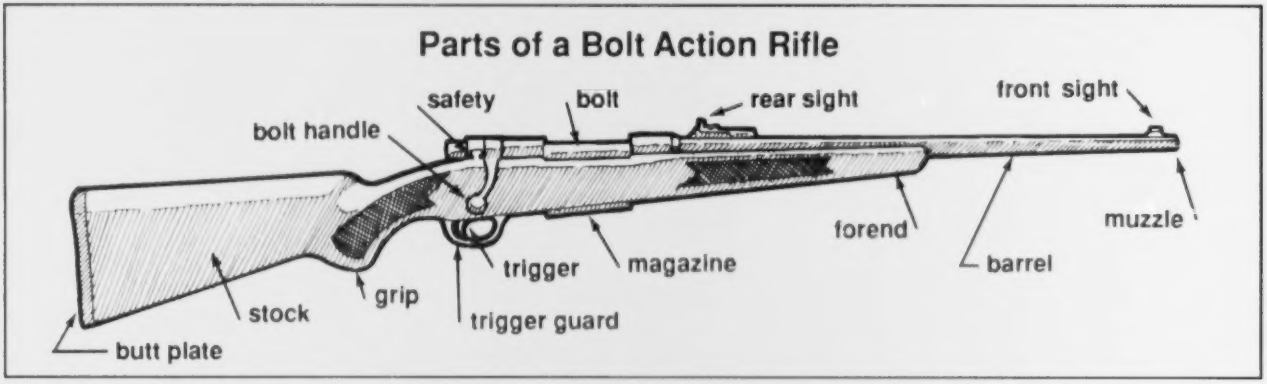
Dominant Eye Exercise

RIFLES

Rifles are made of many different actions and calibers, or inside barrel widths. As previously mentioned, the caliber of a rifle is generally measured in hundredths of an inch. But it also can be measured in thousandths of an inch or millimeters. So a .270-caliber has a larger inside barrel diameter than a .243-caliber. A 9mm has a larger barrel diameter than a 7mm. The main difference between rifles and shotguns is that shotguns do not have rifled barrels, and rifles usually fire only one bullet per shot. Shotguns usually fire many small pellets from each shell. Exceptions to these are the metallic shot cartridges ("rat shot") and shotgun slugs.

RIFLE SIGHTS

Sights are important parts of hunting rifles. Rifle sights fall under three general classes: open sights, peep or aperture sights and telescope sights.



Open sights used to be the most common and the simplest of sights. The combination of a bead or post front sight, and the V- or U-notched rear sight is probably the most popular. Open sights allow quick sighting.

The peep sight provides greater accuracy and the ability to make finer sight adjustments. The front sight is typically the same as in the open sight, but the rear sight has a tiny peephole through which the shooter looks.

Telescopic sights are the most accurate of the three and the most popular for hunting. The hunter can determine specific spot on the target more accurately. A telescope makes the target look larger and doesn't require the shooter to align front and rear sights for a shot. For the proper sight picture, the hunter looks through the rear lens, sets the crosshairs or post **reticles** on the vital area of the animal. **Sight alignment** is the proper term for lining up the rear and front sights. **Sight picture** is the result of correct alignment with the target.

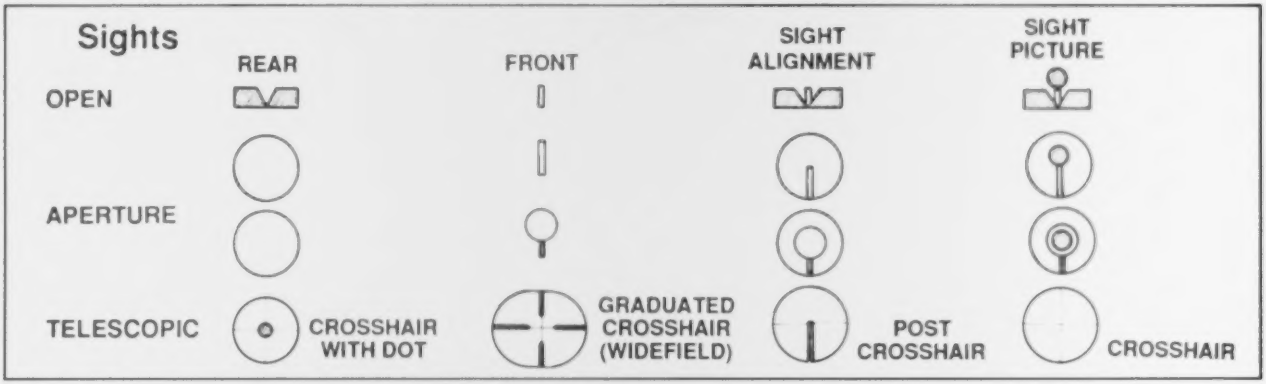
RIFLE POSITIONS

There are four standard rifle positions when shooting on the range. They are standing, sitting, kneeling and prone. Standing is usually the most difficult because of muscle fatigue. Therefore, a shooter should look for techniques which aid in saving muscle strength. One obvious technique is to relax between shots by not continuously holding the firearm to the shoulder. However, be sure to keep the muzzle pointed in a safe direction.

Sitting and kneeling positions help to form a "tripod" effect holding the rifle. Comfort and shooting techniques are the key to successful shots.

Prone position is the most stable since most of the tripod effect rests directly on the ground. All rifle positions can be used in hunting situations but may have to be modified slightly. Look for a stable rest such as tree, stump or dirt mound.

"Prone" Position



TEXAS
WILDLIFE IDENTIFICATION GUIDE

GAME ANIMALS

ELK (WAPITI)

FRANK AGUILAR

LEROY WILLIAMSON

DESCRIPTION: A large, hoofed mammal with cream-colored rump patch, small cream-colored tail, general reddish-brown body with a chestnut-brown neck (mane in males), and huge spreading antlers on males in summer and autumn.

RANGE: In Texas, free-roaming elk are limited to the Trans-Pecos region and is considered a game animal in many of the Trans-Pecos counties. Some private herds (not considered game animals) are located in Central and South Texas regions.

HABITAT/HABITS: Lives in semi-open forests, mountain meadows, foothills plains and valleys; herbivorous—eats grasses, forbs, some brush, twigs and bark; usually migrates to higher elevations in spring; lower elevations in fall; lives to 14 years; male is polygamous (breeds more than one female); "rut" starts in September; calves born in May-June, normally one calf per cow; spotted.

WHITE-TAILED DEER

DESCRIPTION: A small to medium-hoofed mammal with reddish brown to blue-gray or tan colorings; underside of tail is white and produces a white "flag" and rump when raised. Antlers on male consist mainly of main beam with tines growing from it.

RANGE: Texas has the most white-tailed deer of any state at over four million. The Texas "Hill Country" (Edwards Plateau) is perhaps the most densely populated area of white-tailed deer in the country. West Texas and the Panhandle are the only areas which are spotty with whitetails.

HABITAT/HABITS: Lives in forests, swamps, open brushy areas, foothills plains and river bottoms; herbivorous—eats forbs, browse, twigs, shrubs, acorns (mast), fungi and some grasses in season; limited movement (rarely more than one to two miles); lives to 16 years in wild; male is polygamous (breeds more than one female); "rut" starts in October through December; spotted twin fawns are normal.

LEROY WILLIAMSON

BILL REAVES

MULE DEER

BILL REAVES

STEVE HALL

DESCRIPTION: A medium to large hoofed mammal with reddish (summer) to blue-gray (winter) coloring; rump patch is cream-colored with black-tipped, cream-colored tail. Ears are larger than the whitetail and the antlers are dichotomous (branches equally—not all from one beam).

RANGE: Texas mule deer are located primarily in the High Plains and Trans-Pecos regions (west). Some overlapping with white-tailed deer range occurs.

HABITAT/HABITS: Lives in forests, desert shrubs, chaparral, grasslands, plains, foothills and river bottoms; herbivorous—eats forbs, browse, shrubs, twigs, some grasses; migration similar to elk, but in Texas limited movement may occur. Lives to 16 years in wild; male is polygamous (breeds more than one female); "rut" starts in October through December; one to two fawns typical; spotted.

BEST COPY AVAILABLE

GAME ANIMALS

PRONGHORN ANTELOPE

DESCRIPTION: Only species in family, *Antilocapridae*. A medium-sized reddish to tan and white hoofed mammal with large white rump patch and short white tail. Rump hair "stands up" when alerted or fleeing from danger. Has two broad white bands across neck; males have large black cheek (jaw) patch. Males have larger slightly curved horns (sheaths over bony core) each with a single prong growing forward. Females can have smaller horns.

RANGE: Texas pronghorns live primarily in West Texas and Panhandle.

HABITAT/HABITS: Lives in open prairies, plains and brushlands; herbivorous—eats primarily forbs, browse and shrubs such as sagebrush, some grasses; may migrate between summer and winter ranges but limited movements in Texas; lives to 14 years in wild; is polygamous (breeds more than one female); breeds from August through November; two fawns typical; grayish-brown.

MARTIN FULFER

GLEN MILLS

DESERT BIGHORN SHEEP

GLEN MILLS

GLEN MILLS

DESCRIPTION: A medium to large hoofed mammal with dark brown to gray coloring; white rump patch with short darker tail; has two heavy, tapering, curled brown horns in male, smaller and less curled in females.

DISTRIBUTION: Formerly of Trans-Pecos region; is currently being reintroduced to several Trans-Pecos sites. Studies primarily being conducted at Sierra Diablo Wildlife Management Area near Van Horn, Texas. Currently, only one to several permits for hunting are being allowed.

HABITAT/HABITS: Lives in rough, rocky and mountainous terrain; prefers bluffs or steep slopes scattered with ledges of herbaceous plants such as forbs, grasses, brush and cacti and yucca-type plants and shrubs; limited movement in Texas; lives to 15 years in wild; is polygamous (breeds with more than one female); breeds mainly in November and December; males engage in "battles" in which they butt heads; normally one small brown lamb.

AOUDAD SHEEP

DESCRIPTION: A medium hoofed "exotic" mammal reddish to grayish-brown; large growths of hair on throat, chest, legs and end of medium length tail; large yellowish to brown horns in males curve backward and outward; horns of females smaller (from Northern Africa).

DISTRIBUTION: Trans-Pecos region and in South-central and Eastern Panhandle regions, specifically in the Palo Duro Canyon area; some private herds scattered in other locations in Texas.

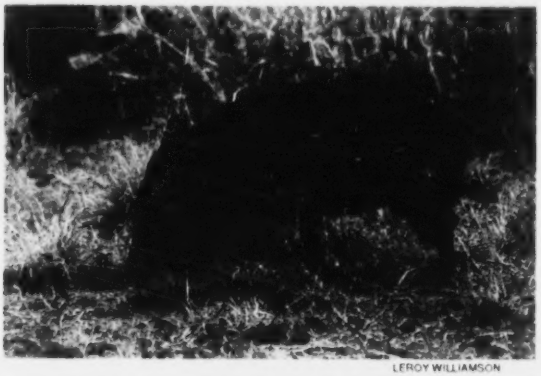
HABITAT/HABITS: Lives in dry, rough, rocky and barren deserts and mountainous areas; prefers steep terrain for escape cover; herbivorous—eats variety of vegetation from grasses, forbs and scrubs; can survive long periods without access to water, males engage in collision or sparring matches to gain breeding females' attention; single lambs common.

GLEN MILLS

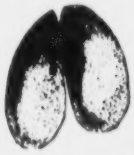
BEST COPY AVAILABLE

GAME ANIMALS

COLLARED PECCARY (JAVELINA)



LEROY WILLIAMSON



DESCRIPTION: A small pig-like mammal with coarse black and gray hair; has a ring or "collar" of light-colored hair around neck over the shoulders; upper tusks are sharp and pointed downward. Musk gland on top of rump emits a strong musk odor which can taint meat if not properly removed before cleaning.

RANGE: Javelinas are scattered throughout South and Southwest Texas.

HABITAT/HABITS: Lives in brushy, dense semi-arid deserts, chaparral, mesquite and cacti regions along cliffs and near waterholes; omnivorous—eats nuts, beans, berries, fruits, cacti, grubs, eggs; prefers acorns, oak and prickly pear; travels in groups; breeds throughout the year; usually produces two young, reddish with a black stripe down back.

FOX SQUIRREL

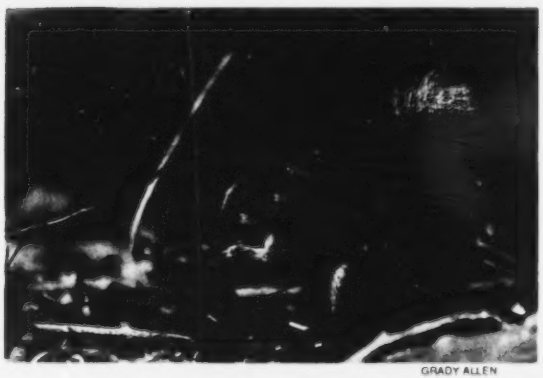
DESCRIPTION: A larger rusty-yellowish squirrel with orange-red underside and brushy tail tipped with darker hairs. Colors may vary in certain areas.

RANGE: Can be found throughout the Eastern two-thirds of Texas.

HABITAT/HABITS: Open hard woodlands, river bottoms and pine forests with interspersed clearings; feeds primarily on nuts, acorns, seeds, fungi and certain layers of trees; buries nuts singly; nests in cavities in trees or builds twig and leaf nests in branches; lives to 10 years. Mates twice around January and May; litter size totals 2-5 young per year.

PHIL DOTSON

GRAY SQUIRREL (EASTERN)



GRADY ALLEN

DESCRIPTION: A medium-sized squirrel with inner yellowish-rusty and gray or white-tipped hairs; has lighter underparts and a brushy tail with varying dark hairs tipped white or yellow.

RANGE: Can be found in East Texas.

HABITAT/HABIT: Hardwood forests, river bottoms and some pine forests interspersed with hardwoods and clearings; foods similar to that of fox squirrels; buries nuts singly in small holes in ground; nests in holes in trees or builds leaf nests; lives to 15 years in captivity; breeds throughout the year but mainly in late summer and winter months; litters size totals two to five naked, blind and helpless young.

BEST COPY AVAILABLE

FUR-BEARING ANIMALS

BADGER

MARTIN FULFER

DESCRIPTION: A medium-sized furbearer with short black legs and yellowish-gray hair. It has a medium white stripe over the head to the nose, white cheeks and a black patch in front of each ear; front claws are long and used for digging.

RANGE: Badgers occur primarily over the Western two-thirds of Texas.

HABITAT/HABITS: Lives primarily in open grasslands and deserts, mesquite, chaparrals; carnivorous, feeds mainly on small rodents which it digs up; digs out burrow for den; has lived 12 years in captivity; breeds from July to August; 2-5 young in one litter per year in underground dens.

BEAVER

DESCRIPTION: A medium-size furbearing rodent with brown fur. Tail is naked, scaly and paddle-shaped. Has large chestnut-colored front teeth and webbed short feet used for swimming.

RANGE: Beavers are found throughout Texas, but mainly in the Eastern half and along the Rio Grande River.

HABITAT/HABITS: Lives in streams, ponds or lakes with alders, willows and trees such as cottonwoods. Constructs houses of sticks, logs and mud or burrows in banks; builds dams which serve to create suitable beaver habitat. Feeds on bark and small twigs often having cut inverted "V" shaped stumps. Stores branches underwater near lodge; builds pathways underwater; lives 11 years in wild; 2-4 kits are born from April-July.

MARTIN FULFER

NUTRIA

MARTIN FULFER

DESCRIPTION: A medium-sized, grayish-brown rodent with a long, round tail with few hairs. Looks like a beaver without the large flat tail, and has hind webbed feet.

RANGE: Nutria are found from Central Texas eastward and on the Texas Coast.

HABITAT/HABITS: Lives in marshes, swamps, ponds and lakes; eats aquatic vegetation; carries food to "feeding station"; nocturnal; burrows in banks with entrance above water and builds resting platforms; builds simple nest and lives four years in captivity; breeds throughout the year; 2-11 young which can swim and feed one day after birth.

MUSKRAT

DESCRIPTION: A smaller-sized furbearing rodent with a grayish underside and brown to grayish-brown fur; has a black, scaly tail and partially-webbed hind feet. Looks like a small nutria or beaver without the flattened tail.

RANGE: Muskrats inhabit far West, Northern, Eastern and coastal borders of Texas.

HABITAT/HABITS: Lives in aquatic habitats around marshes, ponds and streams; feeds on aquatic vegetation; clams, frogs and occasionally on small fish; builds house in shallow water or burrows in banks; entrance is usually underwater; has two to three litters per year of two to six blind and naked young.

STEVE HALL

MINK

MARTIN FULFER

DESCRIPTION: A medium-sized weasel-like furbearer with dark brown fur and a white chin patch. Tail is slightly bushy.

RANGE: Minks occur mainly in North and East-central Texas.

HABITAT/HABITS: Minks prefer stream, pond and lake habitat; carnivorous feeding on small mammals, birds, eggs, frogs, fish, crustacea and crayfish; mainly nocturnal; dens in shoreline banks; swamps; breeds January through March; polygamous (males breed more than one female); 4-10 young are born blind and helpless.

FUR-BEARING ANIMALS

OTTER

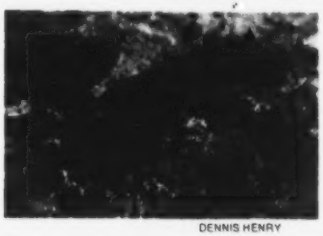
DESCRIPTION: A larger weasel-like furbearer with brown fur above and silvery fur in the face, chin and belly areas; feet are webbed and the tail is thick at the base.

RANGE: Otters are primarily in East Texas.

HABITAT/HABITS: Otters are aquatic and make larger streams and lakes their home; carnivorous—feeds mainly on fish, frogs, crayfish and crustacea; dens typically in banks with entrances below water; lives over 14 years in captivity; 1-5 young born blind.

GLEN MILLS

WEASEL (LONGTAIL)



DENNIS HENRY

DESCRIPTION: Weasels are smaller, stream lined furbearers with yellowish-white underparts and brown to reddish-brown fur over the rest of the body; has a black-tipped tail; some variations (mostly southern weasels) have white patches between eyes and under ears.

RANGE: Weasels inhabit much of Texas, mainly in the Western, Southern and Eastern sections.

HABITAT/HABITS: Weasels are found in many types of habitats; carnivorous—feeds on rodents, rabbits, birds and other small animals; usually nests in old burrows, under banks, wood or rock piles; polygamous (males mate with more than one female); 4-8 young born around April of each year.

RING-TAILED CAT

DESCRIPTION: A small to medium-sized yellowish gray to darker furbearer with a long, distinctive, whitish and blackish-brown ringed tail. Catlike—has small head and medium-sized ears. Raccoon has larger body, striped face and shorter tail; only species of ringtail north of Mexico.

RANGE: Southern half of Texas.

HABITAT/HABITS: Found in rocky ridges, cliffs, chaparral, semi deserts and near water. Omnivorous—feeds on small mammals, insects, birds, lizards and some plants and fruit. Nocturnal—dens in caves, hollow trees, under rock piles and in unused buildings. Has lived to eight years in captivity; 3-4 young born around May or June.

MARTIN FULFER

SPOTTED SKUNK (Civet Cat)

JOHN SUHRSTEDT

DESCRIPTION: Small furbearer with black fur and white patches on forehead, under ears and four broken white stripes along neck, back and sides. Tail is white-tipped.

RANGE: Eastern and Western species inhabit most of Texas.

HABITAT/HABITS: Lives in shrublands, open wooded lots, along streams and prairies; carnivorous-feeds on mice, birds, carrion, insects and some vegetation; nocturnal—nests in burrows, beneath rock piles and in unused buildings. Emits strong scent in defense by standing on front feet; 4-7 young born around May or June.

SKUNKS (Striped, Hooded & Hog-nosed)

DESCRIPTION: These small to medium-sized black furred skunks have large white stripes on back surfaces from the head to the tail. Some striped skunks can be more black towards the back. Striped skunks have white stripes from head to nose. Hooded skunks may sometimes be darker with fainter white stripes.

RANGE: Skunks of various species including the spotted skunks (civet cats) occur throughout Texas.

HABITAT/HABITS: Lives in semi-open prairies and chaparrals, mixed woods, rocky areas, shrublands, valleys and near water bodies. Mostly carnivorous—feeding on mice, eggs, insects, birds, carrion and some vegetation; mostly nocturnal—dens in ground burrows, rock crevices, under buildings and rock piles. Most skunk species have from 2-6 young born from April through May.

(Striped Skunk) GRADY ALLEN

BEST COPY AVAILABLE

FUR-BEARING ANIMALS

RACCOON

MARTIN FULFER

DESCRIPTION: A medium-sized furbearer with dark and light mixed fur with a distinctive large black mask across the face over whitish fur; small to medium ears and a distinctive ringed dark and light tail (much shorter than ring-tailed cat).

RANGE: Found throughout Texas.

HABITAT/HABITS: Lives along water bodies, in wooded areas or near cliffs or bluffs; omnivorous—feeds on nuts, fruits, fish, insects, frogs, crayfish, birds, crops and eggs; may dunk food in water before eating; nocturnal—dens in hollow trees, crevices, ground burrows or in used buildings and barns; 2-7 young born around April or May.

OPOSSUM

DESCRIPTION: Small to medium-sized gray to darkish-gray furbearer with whitish face and smaller ears; it has a rat-like tail which is round, and can hold the opossum to limbs and branches. Only marsupial in North America.

RANGE: Can be found throughout most of Texas.

HABITAT/HABITS: Lives around woodlands, water bodies and farming areas; feeds on fruits, nuts, vegetables, meat, eggs, carrion and insects. Nocturnal—dens in hollow trees, logs, culverts, brush or rock piles and under used buildings; can have several litters per year with up to 14 per litter. Young crawl to and remain in pouch for several months and later rides on mother's back interlocking tails.

GLEN MILLS

RED FOX

GRADY ALLEN

DESCRIPTION: This medium-sized normally reddish-yellow furbearer can also be darker or lighter in color. Has a bushy tail with characteristically white-tipped tail. Usually has dark legs; dark paws.

RANGE: Lives in North-central and Eastern Texas.

HABITAT/HABITS: Lives in mixed woodlands, farming and open country; carnivorous—feeds mostly on rabbits, hares, mice and some vegetation such as fruits and berries; mostly nocturnal—dens on slopes with porous soil; 4-9 pups born around March through April.

GRAY FOX

DESCRIPTION: Medium-sized with "salt-and-pepper" fur outlined in rusty fur on neck, flanks and legs; has a bushy tail topped with a black stripe and tip; face is characteristic with white under gray under rust.

RANGE: Lives throughout most of Texas.

HABITAT/HABITS: Lives in chaparral, open woodlands, rimrock and rocky country; omnivorous—feeds on small mammals, birds, eggs, acorns, fruits and insects; mostly nocturnal—dens in hollow trees, logs, ground burrows or beneath rocks; 3-7 young born from April through May.

LEROY WILLIAMSON

KIT (DESERT) AND SWIFT FOXES

GRADY ALLEN

(Kit Fox)

DESCRIPTION: These small to medium-sized furbearers have a pale gray to buffy-yellow bodies with whitish underside; kit fox has large ears; swift fox has smaller ears; both have black-tipped tails.

RANGE: Kit foxes inhabit the Trans-Pecos region of Texas. The swift foxes inhabit the Western to Central Panhandle region.

HABITAT/HABITS: These smaller foxes prefer open deserts or plains with low vegetation; carnivorous—feeds primarily on small rodents and insects. Nocturnal—dens in ground burrows; 4-7 pups born in February through April.

OTHER MAMMALS

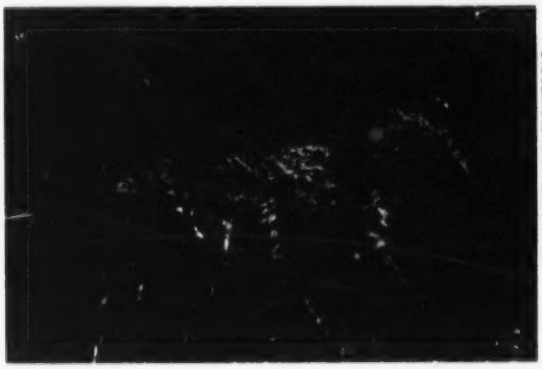
COYOTE

DESCRIPTION: A medium-sized to larger furbearer with gray to reddish-gray fur, more reddish on legs, feet and ears; has dark-tipped tail and whitish belly and throat. Resembles a medium-sized dog.

RANGE: Can be found throughout Texas.

HABITAT/HABITS: Lives in prairies, open woodlands, shrublands and a variety of habitats; carnivorous—feeds primarily on rabbits, small mammals and some carrion. Mainly nocturnal but can be active anytime; dens in ground, banks or burrows, will cross with domestic dogs, 5-10 pups born from April through May.

BOBCAT (Tagging Requirements)



DESCRIPTION: A medium-sized furbearing cat with reddish-spotted fur and a black-only on top at the tip of a very short tail. Has light-spotted undersides including face.

RANGE: Bobcats can be seen throughout Texas.

HABITAT/HABITS: Inhabits chaparrals, swamplands, woodlands, rimrock and rocky prairie habitat; carnivorous—feeds primarily on small mammals and birds. Mainly nocturnal and solitary—dens under rock ledges, hollow logs or under downfalls; 2-4 kittens in one litter can be born throughout the year.

MOUNTAIN LION (COUGAR)

DESCRIPTION: A large furbearing, tan-gray cat with long brownish tipped tail.

RANGE: Mountain lions are found mostly in South and West Texas.

HABITAT/HABITS: Lives mainly in rugged mountains and sometimes in forests and swamplands; carnivorous—feeds on large and small mammals, especially deer; makes a food "cache" out of uneaten prey; mainly nocturnal, dens in caves, rock crevices and other unconcealed locations; usually two spotted cubs born in any month.

ARMADILLO (NINE-BANDED)

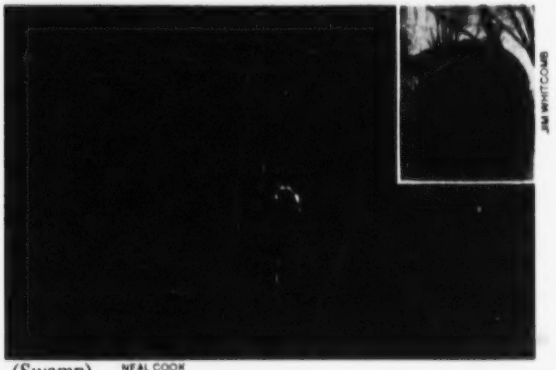
DESCRIPTION: This small cat-size furbearer is covered with an armor-plated body, the only one like it in the United States.

RANGE: Found throughout most of Texas except much of the Trans-Pecos and Panhandle regions.

HABITAT/HABITS: Lives mainly in woodlands, brushy areas, farmlands and bluff country; feeds almost entirely on insects, but eats some berries, fruits and bird eggs; roots around in damp, moist leaves and brush for much of its food; four young of same sex are born from March through April.

OTHER MAMMALS

RABBITS (Swamp and Cottontails)



(Swamp) NEAL COOK

DESCRIPTION: Rabbits are small brownish-gray furbearers with cottontails or short round-like darkish-topped tails; large ears but not nearly as large as jackrabbits.

RANGE: Eastern cottontails are found throughout Texas, desert cottontails over the Western two-thirds and swamp rabbits over the Eastern one-third.

HABITAT/HABITS: Lives in heavy brush cover in forests, farmlands and chaparral, swamplands and weed patches; herbivorous—feeds on green vegetation; 4-7 young per litter and three to four litters may be produced per year.

JACKRABBITS (Black-tailed)

DESCRIPTION: A medium-sized (largest rabbit) grayish-brown furbearer with large black-tipped ears and a black streak on top of a short tail.

RANGE: Blacktails occur throughout much of Texas.

HABITAT/HABITS: Lives primarily on open prairies, shrublands and semi-arid deserts with vegetation; herbivorous—feeds on green vegetation; 2-4 young born in litter.

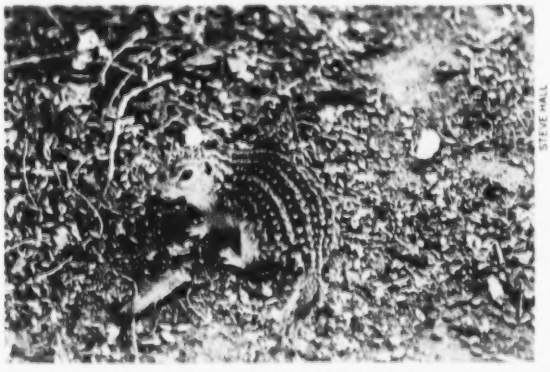
PRAIRIE DOGS (Black-tailed)

DESCRIPTION: These small-sized tan to reddish rodents are slightly smaller than house cats; ears are small and underside is light colored; short tails are black-tipped.

RANGE: Can be found in the Western half of Texas.

HABITAT/HABITS: Lives primarily in dry upland prairies in colonies or "towns" of burrows; feeds mostly on forbs and grasses but may eat some insects; may be dormant for short times; 3-5 young are born in deep burrows from March through April.

GROUND SQUIRRELS



DESCRIPTION: Ground squirrels are small squirrel-like furbearers of various tan to grayish-dark colors.

RANGE: Several species of ground squirrels can be found throughout Texas.

HABITAT/HABITS: Lives primarily in shortgrass prairies, grasslands, brush and shrublands, farmlands and in urban areas, especially around golf courses (thirteen-lined ground squirrel); feeds on vegetation, seeds, some insects and meat; lives in underground burrows; some hibernate; usually 4-10 young born per litter, sometimes two litters.

GAME BIRDS

QUAIL Small chicken-like upland game birds; most have strong legs; short wings, flight is rapid but only for short distances; many like to run before choosing to fly; forage on ground for seeds and insects; not migratory.

Bobwhite (Northern)

NEAL COOK

Found throughout Eastern two-thirds of Texas; abundant in brush or farmlands, chaparral and open pinelands. Males have white throat and eye-line; females are buffy colored; call is a distinctive "bob-bob-white."

Scaled

BILL REAVES

Found throughout West Texas in semi-arid desert country and shrublands. Have blue-gray coloration with distinctive white crest or cap; seldom flies; call is sharp with two syllables.

Gambel's

GLEN MILLS

Found in far West Texas in dry desert-like shrublands. Has black belly patch and a distinctive black face bordered with white stripes and a teardrop-shaped topknot near front top of head; call is three slurred notes, the second being the loudest.

Mearns' (No open season)

GLEN MILLS

Called the Montezuma quail formally; found in several locations in far West Texas. Males have distinctive spotted flanks and black and white striped head; female is brown with face patterns; call is whistle like.

GAME BIRDS

RING-NECKED PHEASANT

Introduced large chicken-like bird which is found primarily in the Panhandle region, but also is located near the central coast and on private shooting preserves. Male is colorful with white neck band, green and purple iridescent head with red eye patch (skin) and grayish head with green "ear-like" tufts. Hen is a dull brown. Both have long tail feathers and fly for short distances; most are found around farmlands; call is a two-syllable cackle.

BILL REAVES

PRAIRIE CHICKENS

Greater, lesser and Attwater's (endangered species) are chicken-like birds with barred stripe bodies and short round tails; males gather to display before females on courtship or booming grounds; huntable species are located in Panhandle region; Attwater's (non-huntable) is located towards the central coastal region; during display males make hollow-pitched sounds.

TEXAS PARKS & WILDLIFE PHOTO FILE

CHACHALACA (PLAIN)

Found in deep South Texas mainly near Rio Grande River; large chicken-like, dark-greenish to brown bird with a crest and light pink skin on throat; has long iridescent green tail; prefers thickets, woodlands or dense vegetation; call is a loud "chachalaca."

STEVE HALL

WILD TURKEY

Turkeys are common throughout Texas and come in several subspecies, the two most common being the Rio Grande and Eastern; large dark-colored bird with bluish (female) to red, white and blue head (mating male); prefers open woodlands, brush country, chaparral, river bottoms and hardwoods. Eats acorns, nuts, seeds, fruit and insects; males are polygamous; fly strong for short distances; prefers to run; mating call is a gobble and normal calls are clucks, putts and purrs.

JIM WHITCOMB

MIGRATORY GAME BIRDS

DUCKS —Texas is home to hundreds of thousands of ducks of many species. Most ducks winter in Texas after a long fall migration from the Northern states and Canadian provinces. Ducks are wetland birds which have webbed feet in order to swim or propel themselves through water. They have flattened bills (most pronounced in the shoveler) or serrated bills such as found in mergansers. Males of the species are usually more colorful except during eclipse plumage which results from the replacement or shedding of feathers. For a few weeks after breeding, the drakes (males) resemble the hens in appearance until they return to breeding or wintering plumage. Wing feathers are only shed once a year, maintain the same coloration and can be used to properly identify ducks in the hand. Ducks usually lay from four to as many as 18 eggs (mergansers).

"PUDDLE" DUCKS

Characteristics: Puddle ducks are surface feeding ducks which inhabit marshes, ponds, lakes, slow rivers and sometimes bays. They feed primarily by tipping up or dabbling or on grain crops and water plants. They "spring" into the air on take off and can walk more easily than diver ducks because legs are closer to center of body. Most have an iridescent "speculum" or upper wing patch.

MALLARD

NORTHERN PINTAIL

GADWALL

AMERICAN WIGEON

NORTHERN SHOVELER

CINNAMON TEAL

GREEN-WINGED TEAL

WOOD DUCK

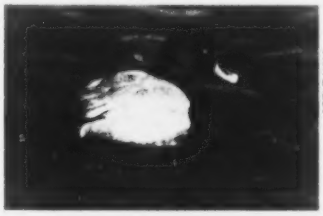
MIGRATORY GAME BIRDS

"DIVER" DUCKS

Characteristics: Diver ducks dive for food usually in large, deep lakes, rivers, ponds, coastal bays and inlets. They feed primarily on fish, shellfish, aquatic plants and mollusks. They typically run or fly low across water to takeoff and many have legs toward the back end of the body making it difficult to walk on land. Most have whitish-gray upper wing patches.

CANVASBACK (female) **PROTECTED SPECIES**

REDHEAD



RING-NECKED DUCK

SCAUPS (LESSER SCAUP)

OTHER DUCKS

Whistling-ducks, stiff-tailed ducks, sea ducks and mergansers are some of the other waterfowl which can be seen in Texas. Most have unique features such as the whistling (tree) ducks with their long legs; the stiff-tails such as the ruddy ducks with their short squatty body; and the mergansers which have a serrated bill in order to catch and eat fish. The common goldeneye and bufflehead are commonly seen in Texas.

BLACK-BELLIED WHISTLING DUCK

RUDDY DUCKS (background)

COMMON GOLDENEYE (female)

HOODED MERGANSER

BEST COPY AVAILABLE

MIGRATORY GAME BIRDS

GEESE

Texas is also home to thousands of geese of various species labeled dark or light geese in the hunting regulations. Geese winter in Texas after a long migration route mainly from Canada and Alaska. They are larger than ducks, some reaching sizes of 14 to 20 lbs. Most, however, are smaller, and both species have the same coloration. They molt once a year, and their legs are more forward on their body than ducks. This adaptation allows them to walk and graze on grains, grasses and other vegetation on land. Like ducks, they have webbed feet, flattened bills and strong wings for long flight. Young are hatched down-covered and can walk or swim a few hours after hatching. Geese are only second in size to the largest waterfowl - swans.

CANADA GOOSE

GREATER WHITE-FRONTED GOOSE

SNOW GOOSE

SNOW GOOSE (Blue Phase)

OTHER WATERFOWL

American Coot - Slate gray duck-like bird with white bill, greenish legs and lobed feet; found throughout Texas in water environments; eats aquatic plants and must run across water to take off.

Gallinules/Moorhens - Purple gallinules and common moorhens are closely related to coots and rails but do not swim as much in open water like coots. They hide in reeds much less than rails. Common moorhen has yellow-tipped, red bill and red frontal shied but otherwise looks like a coot. Purple gallinule looks like a "purple coot."

Rails - Various species of rails and the sora inhabit marshes, swamplands and coastal areas of Texas. Rails are small coot-like birds which typically are shy, hiding in reeds and shoreline vegetation.

Common (Wilson's) Snipe - A snipe is a long-billed, brownish shorebird with a striped back. Frequents marshes, ponds, meadows and coastal areas of Texas. Snipes have fast erratic flights.

Sandhill Crane - Cranes are large migratory birds, very tall with long necks and legs. Whooping cranes (white mature and grayish young) are endangered and protected. Sandhill cranes can be hunted. They have red foreheads and prefer aquatic areas or grain fields. Call is a loud distinctive "dar-r-r-o-o-o."

Plover and Shorebirds (No Open Seasons) - Plovers and other shorebirds are mostly migratory and inhabit many of the water environments of Texas. Some like the yellow longlegs look much like the snipe. It is important for hunters to properly identify birds before shooting.

BEST COPY AVAILABLE

MIGRATORY GAME BIRDS

AMERICAN COOT

COMMON SNIPE

SANDHILL CRANE

NON-WATERFOWL

DOVES

Mourning dove is migratory and light brownish-gray, lighter below; wings are dark; tail has white-tipped outer feathers; found throughout Texas; inhabits dry uplands, grainfields, chaparral, shrublands and deserts. Nests in all of North America and may nest several times; two white eggs; young are fed "pigeon milk" and are called squabs.

White-winged doves have larger, browner bodies and have white upper wing coverts; tail has white-tipped outer tail feathers; found mainly in South Texas, especially in the Rio Grande Valley; two buffy eggs.

White-tipped (White-fronted dove) have a white forehead and all-brown body and inhabit far South Texas.

PIGEONS

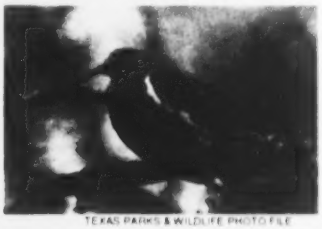
Refer to "wild" pigeons rather than common pigeons more correctly called rock doves. They are dove-like but larger. There is no open season on the two species which inhabit few locations in Texas; they are the band-tailed and red-billed pigeons.

WOODCOCK (AMERICAN)

Quail-sized bird with leaf-brown camouflage coloration and a long bill. Inhabits moist woodlands and thickets near open fields in East, Southeast Texas; call a loud "beep" noise; lays four brown-spotted, buff eggs among leaves or under bushes.

MOURNING DOVE

WHITE-WINGED DOVE



WOODCOCK

EXOTIC SPECIES

Exotic species are foreign animals which have been introduced into Texas. Some species like the ring-necked pheasant were highly successful with their introduction and are so abundant that they are considered a prized game bird in most states. Others such as the white rhinoceros have been introduced into Texas in hopes to prevent their extinction.

Exotic deer species have been popularly introduced into Texas, and represent a significant huntable species to sportsmen. Some exotics were originally brought to America during its discovery, and many have been domesticated to serve man's need. Game preserves stock exotic species much like they would raise agricultural crops.

Most exotics have restricted movement because of game-proof fencing and are owned by landowners. Some "free-roaming" exotics have expanded their range into neighboring counties. Exotic species are somewhat controversial because they can out-compete many of the native species such as white-tailed deer. It is important that landowners use hunters to control exotic numbers just as hunters are used in wildlife management by the states.

Exotics have many ecological, recreational, economical and certain aesthetic impacts and values in the State of Texas. Some include the axis deer, fallow deer, sika deer, blackbuck antelope, nilgai antelope, aoudad or barbary sheep, mouflan sheep, European wild boar and red deer.

AXIS DEER

MARTIN FULFER

BLACKBUCK ANTELOPE

BILL REAVES

FALLOW DEER

MARTIN FULFER

RESTRICTED SPECIES
ENDANGERED, THREATENED AND PROTECTED SPECIES

WHOOPING CRANE (ENDANGERED)

Endangered Species—Endangered species are species which historically lived in parts of Texas or are rare species on the verge of extinction. Some were always rare, others have been literally wiped from existence because of man's entrance and alteration of habitat. In Texas, specific species and habitat is protected and research is conducted to try to increase the numbers and/or habitat of the species. They include mammals like the red wolf, jaguar and ocelot. Birds include the whooping crane, bald eagle and black-capped vireo. There are also endangered reptiles, amphibians, fishes and plants.

REDDISH EGRET (THREATENED)

Threatened Species—Threatened species are more numerous but are on the bridge of endangerment. They include some whales, hawks, egrets, the golden-cheeked warbler, Texas horned lizard and Texas indigo snake.

OWLS (PROTECTED)

Protected Raptors (Eagles, Falcons, Hawks, Owls)—Raptors are eagles, falcons, hawks and owls or birds of prey, which means they feed on other birds and mammals. Raptors serve a useful purpose in keeping down rodent and other populations thus preventing things like wide-spread disease or "pest situations." Although once considered a harmful predator, today we know them as true "friends of man."

PELICANS (PROTECTED)

Protected Shorebirds—Many shorebirds migrate with huntable waterfowl. They are protected just like raptors and serve many useful purposes. Some hunted species such as rails and snipe look like other protected species of shorebirds. Pelicans, herons, ibises, egrets, gulls and smaller shorebirds fall in this category.

CORMORANTS (PROTECTED)

"Look-a-Likes"— These are protected animals which look like hunted species. For example the meadowlark can be mistaken for quail or dove. Both many times fly together or inhabit the same fields. Roadrunners could be mistaken for chachalacas. American kestrels (sparrow hawks) can look like doves. Many protected sparrows and song birds look like the unprotected English sparrow. Double-crested cormorants and other shorebirds look like geese and ducks. One hunter in 1989 shot a whooping crane, mistaking it for a snow goose. All these remind hunters to be sure of their target before pulling the trigger.

BEST COPY AVAILABLE

"Kneeling" Position

"Sitting" Position

"Standing" Position

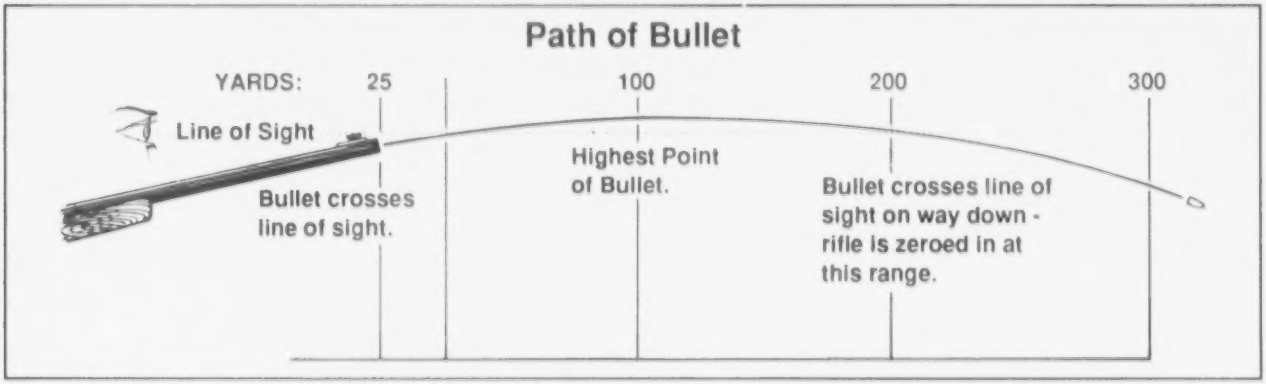
RANGE/DISTANCES

Rifles are long-range guns, some capable of shooting a bullet more than three miles. Even the .22-caliber rimfire can be dangerous at a mile or more. Its effective hunting **range**, however, is much less and depends upon more than just the speed and size of the bullet.

Rimfire rifles (.22-caliber) are best used at ranges less than 80 yards. The curved path (trajectory) of the bullet and the effects of wind on it make good hits unlikely at longer ranges. Centerfire rifles, such as the .30-30, are good deer guns up to about 150 yards. More powerful rifles, such as the .30-06, will take big game cleanly at further distances. More important than the rifle and ammunition is the shooter's knowledge of the gun and the target animal's vital areas. Most important is the shooter's skill in placing the first shot in the right place. It's foolish and unethical to shoot at game which is too far away or to shoot too many times to allow you confidence of a clean kill.

RIFLE FIRING TECHNIQUES

Correct trigger squeeze involves a steady pressure until the gun fires. Jerking the trigger or sudden clenching of the trigger hand can move the gun enough to cause a miss. The



BEST COPY AVAILABLE

shooter also must control his or her breathing for the few seconds it takes to aim and fire, so it doesn't throw the shot off target.

When you are ready to shoot, draw a deep breath and exhale about half of it. Then, squeeze the trigger very slowly, until the gun fires. Practice will make holding your breath and proper trigger squeeze habitual. Both are important in good rifle shooting. In hunting, excitement will make it more difficult to breath. Relax and follow the same shooting principles.

After the shot it is important to continue the squeeze or **follow through**. You should see approximately the same sight picture. Good follow through will allow the actual shot to be a surprise rather than letting you try to anticipate the shot and then flinching.

SHOTGUNS

Shotguns are made in several common gauges, 12, 16, 20, 28, and .410. Other gauges have been used in the past but are not common today. These include 4, 8 10, 14, 24 and 32 gauges. Remember, a large gauge number indicates a small bore and a small number indicates a large bore. For example, a 12-gauge is larger than a 16- or 20-gauge.

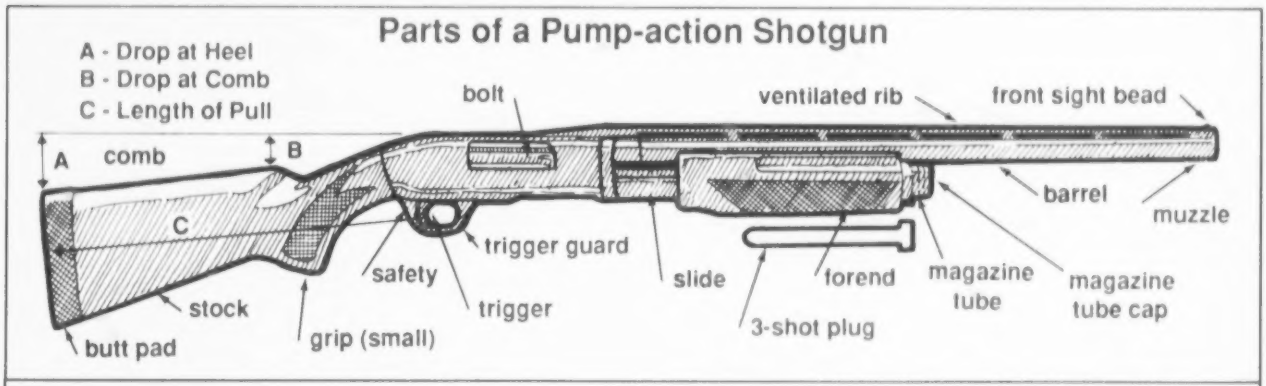
The Migratory Bird Treaty Act requires that the magazine of a shotgun used for waterfowl and dove hunting be plugged so it will hold only two shells. These two, plus one shell in the chamber, limit the shooter to three shells at one loading. Shotgun manufacturers furnish magazine **plugs** that meet this requirement. Waterfowl may be hunted only with shotguns 10-gauge or smaller. Some states require that shotguns used for any type of hunting be plugged. This would be the ethical practice, anyway.

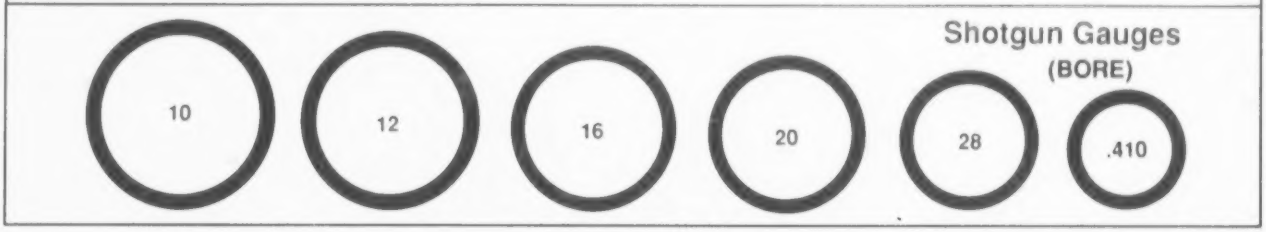
Shotgun fit and stance are important.

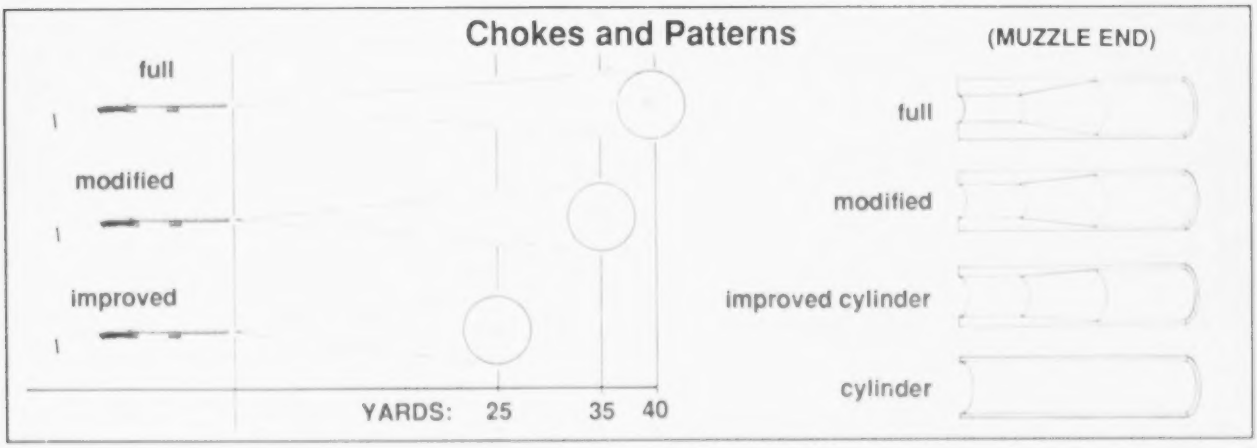
POSITION

The shotgun is almost always fired from a standing position and at a moving target.

The shotgunner should stand in a relaxed position, with the left foot slightly forward (for the right-handed shooter) and the body leaning a little forward. Many shotgunners keep their knees slightly bent, because the shotgun is easier to swing with a moving target. The bent leg to the rear controls the movements of your hips so you can swing smoothly with the target. The position of the feet is important and, even for an unexpected shot, take the time to place your feet properly. The resulting position will make you open and face in the direction to hit the target. This will give you as much swing as is comfortable and possible.







POINTING

The shotgun is not aimed like a rifle, since it would be too slow a process in most cases. It is made to be pointed, with the eye sighting a little above the barrel or rib. The shooter should not focus on the barrel, as attention must be concentrated on the target.

Sights are not nearly as important to shotgunners. They are not trying to aim with the same pin-point accuracy as the rifle shooter, because the pellets in a shot charge spread as they fly through the air. Usually a shotgun sight is a single round bead on top of the muzzle. The shooter's eye must be in line with the barrel, so it is important to position the head properly on the stock. Gun fit is important so you do not have to move your head to the stock. The stock is brought upward and backward so that your cheek fits snugly against the comb. This places your eyes in the correct position and you are able to see a proper "sight picture."

SHOTGUN CHOKE

The shotgun **choke** determines the spread, or pattern, and column of the shot after it leaves the barrel. A choke is the narrowest point in the barrel, along an inch or two from the muzzle. One way to understand a choke is to think of it as a water-hose nozzle—full choke makes the water come out in a narrow stream, cylinder choke makes the water come out in a wide spray, modified is between the two.

Several types of chokes are made, as listed above. The spread effect of the most common chokes are illustrated. Full choke is the most constricted. Modified choke is less constricted than a full choke. Improved cylinder is less constricted than a modified choke. Cylinder choke means there is no constriction in the barrel and the shot spreads quickly. Choke controls how much shot will hit in a certain area at different ranges. Some modern shotguns use chokes that can be changed without changing barrels.

RANGE

The shotgun is not a long-range firearm. Shotgunners must know the abilities of their firearm so they will know quickly when a shot is going to give a clean kill. Generally gamebirds should be shot within 45 yards, however, they should usually be outside close range to avoid wasting meat. Learning to estimate distances is an important part of hunting.

A shotgunner will select an appropriate size shot for the game pursued. Small shot such as 7 1/2 or 8 are commonly used for target practice, dove or quail. Medium shot ranging from 4 to 6 are commonly used for pheasants, ducks and called-in turkeys. Larger shot is used for geese. Steel shot used for waterfowl differs from lead shot (see steel shot illustration - page 57).

SHOTGUNNING TECHNIQUES

While the pellets from a shotgun shell travel many times the speed of any moving target, it is still necessary to **lead** or swing through and lead the target. Proper lead distances can be learned only by practice. Learning is faster, though, when these principles are followed:

The shooter's own reaction time—the time muscles take to pull the trigger after deciding to fire—is much longer (slower) than the time it takes the shot to reach its target after the trigger is pulled. A lead of many yards ahead of a flying bird would be necessary if it had to include allowance for the shooter's reaction time. To avoid that, the shooter swings the gun smoothly, aiming just ahead of the target and firing while still swinging.

Usually only a few feet of lead are necessary for crossing shots, depending on the range and target speed. The gun can be pointed directly at and just below a target moving straight away. The shooter should point the muzzle to blot out an incoming target as he or she fires and swings the barrel up to keep the lead. Pull the trigger just as the target disappears behind the barrel. Keep swinging the barrel smoothly as the gun is fired and even afterward. If you stop or jerk the swing even slightly you will usually miss.

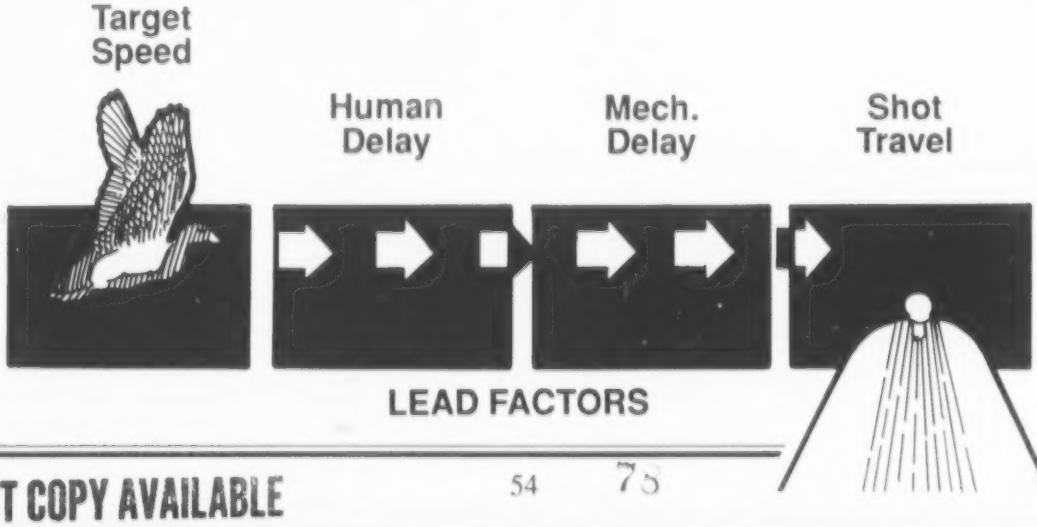
The swing-through method is preferred for crossing shots because no matter what the distance, the shotgunner comes from behind the target, swings through it, then slaps the trigger immediately past the target. The speed of the swing against the speed of the object gives about the same lead at any distance or target speed.

SHOTGUNNING TECHNIQUES

SNAP SHOOTING

SWING THROUGH

SUSTAINED LEAD



LEAD FACTORS

BEST COPY AVAILABLE

HANDGUNS

Modern-day handguns were developed as military weapons and later as short-range guns for personal defense. Handguns are meant to be fired from one hand, though the most accurate shooting is often done with two. Recently, hunting with handguns has become popular just like muzzleloading and archery have.

Modern handguns have three basic types of actions: **revolvers**, semi-automatics and break or hinge-actions; there are also some bolt actions.

Revolvers can be **single-action** or **double-action** depending on the loading or shooting features. In a single-action, the hammer must be manually cocked by hand before it can be fired. In the double-action, the shooter can squeeze the trigger to cock the hammer, rotate the **cylinder** and let the hammer drop. This sequence fires a shot of a cartridge aligned in front of the hammer.

Loading single actions usually occurs through a gate on the right side of the frame. Pull the hammer back to **half-cock**. This allows the cylinder to rotate. Load all "chambers" in the cylinder except for the one true chamber sitting immediately in front of the hammer.

Load double actions by releasing the cylinder. It will fall downward and expose all chambers for loading. Again, do not load the one chamber which will sit in front of the barrel when the cylinder is locked back into place. This will allow a safer carry in the holster or hand.

In each case, where the hammer is drawn to **full-cock**, the cylinder will rotate placing a cartridge in the firing position.

Semi-automatic handguns are popular, but are more unfamiliar to novice firearm handlers. Coupled with the short barrel distance, a careless handler or beginning shooter usually has initial problems figuring out how the releases or slides work. Therefore, be sure not to handle unfamiliar firearms, especially semi-automatic handguns, until you have had the proper training or orientation.

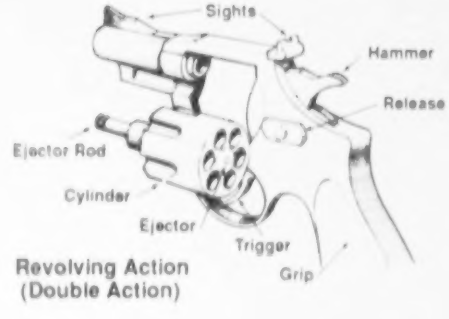
Semi-automatics have the same features as all other handguns—a grip or frame, barrel and action. It also has a slide mechanism which moves back and forth automatically loading a new round following a trigger squeeze.

Rounds are usually stored in a clip magazine which is locked into the grip or handle. Be sure the clip of ammunition is separate from the handgun when storing or transporting handguns. Also, handgun carry laws are strict in many states. In Texas, handgun carry laws can be found in "Know Your Texas Firearm Laws" in the references of this section. Finally, never carry a handgun with a round in the chamber. Do this when you are about to take a safe, legal shot.

Break-open handgun with interchangeable barrel.

Handgun Actions
(top) Revolver
(bottom) Semi-Automatic

Semi-Automatic Handgun



Revolving Action
(Double Action)

Single-shot break open handguns are being made more versatile with interchangeable barrels and functions. Break opens are easier to check to see if they are loaded. For this reason, they might be safer in the hands of an inexperienced handgunner. Still, safe handling is important with single shots.

SHOOTING

Sighting and firing a handgun are much the same as with a rifle, except that there is no shoulder stock to steady a handgun. Handgun barrels are much shorter, too, reducing the distance between sights and increasing the error caused by muzzle movement. Because of the short distance between handgun sights, proper sight adjustment is important. A square rear notch sight and a heavy square front blade sight are common in handguns. This sight arrangement is easy to align. Many handgunners use a "six o'clock hold," or a sight picture that places the bullseye on the top of the front blade, rather than placing the sights over the center of the target. However, hunters should choose to hold the alignment directly over the vital area. Scopes with long eye relief have become popular with handgunners and offer exact sighting for hunters. Scopes may take longer to align on target than iron, or open, sights; but are usually more accurate.

Whether revolver, single-shot or autoloader, a handgun should be held high on the grip, so recoil is directed back to the hand and arm in a straight line. This allows better repeat shots and more accurate shooting. The first joint of the finger should take up trigger pressure—not the tip, as is often done with rifles. Use a two-handed hold whenever possible and a rest if it is convenient. Powder flashing at the front of the cylinder can

Handgun shooting position

cause burns when revolvers are fired. Therefore, be sure not to hold the gun or put your off hand in front of the trigger area. The slide and hammer of an autoloader can bruise any part of the shooter's body that is too close. All handguns should be fired at arm's length.

Grip

HUNTING

The taking of Texas big game with handguns is legal so long as you have centerfire ammunition. Other states have similar regulations, usually with minimum caliber and barrel length restrictions. Most modern handguns are capable of cleanly killing big game, such as deer and pronghorns. More powerful single-shot handguns are even being chambered for rifle cartridges, such as the .35 Remington and .308 Winchester.

AMMUNITION

Modern-day ammunition can be divided into **cartridges** and **shotshells**. Cartridges are mainly used in rifles and handguns, shotshells in shotguns.

The primary components of modern-day cartridges are the case, primer, smokeless powder and bullet. **Primers** are either in the center and called **centerfire** or in the rim and called **rimfire**. Modern-day primers are made from chemicals which explode and produce heat, gas and hot particles necessary to ignite powders. The explosion is caused when a firing pin strikes the primer properly.

For shotshells the main components are the case, primer, smokeless powder, wad and shot.

Smokeless powders have different burning rates under different pressures. They also have different shapes than does black powder, the primitive propellent. Smokeless powders are mixtures of chemicals designed to burn under controlled conditions. They also burn at the proper rate.

Generally, cartridge powders come in small cylinders or spheres. Shotshell powders come in flakes or wafers. The shape affects burning rate. All powders are extremely flammable and are intended to burn fast when ignited. When they burn, a lot of gas is formed at high temperatures. Out in the open, smokeless powder burns less effectively than when in a chamber. Burning rates of smokeless powder increase with increased pressures. Therefore, in a cartridge and chamber, the increased pressure can launch a bullet at very high speeds over long distances—some as much as three to four miles.

A **bullet** is the projectile shot from a cartridge in a rifle or handgun. It is primarily made of lead, but may have a **jacket** of a harder metal such as copper. Bullets used in hunting may have soft or hollow points. These bullets are designed to expand upon impact. Target bullets usually have solid points which make smaller holes.

Bullets come in a variety of different sizes and weights. It is important to sight-in your rifle with the same size and shape you will be using when hunting. Typically, larger animals take larger weights of bullets. However, larger weights may affect speed and accuracy. Again, sight-in at known distances, and do not take shots outside of your effective range.

Shot pellets are also of different sizes and are made from lead or steel. Sizes of shot differ in how far they will shoot and what type of game you are after.

The range of bullets and shot is surprising to most people. The following represents typical ranges of different sizes of calibers and gauge ammunition:

Caliber - Bullets	Range-Miles
.22 short, long and long rifle	1/2 to 2
.22 MAG.	1-1/2 to 2-1/2
.222	2 to 3
.243	2-1/2 to 3-1/2
.270	2-1/2 to 3-1/2
7mm MAG.	3-1/2 to 5
.30-30	2 to 2-1/2
.30-06	3-1/2 to 4-1/2
.300 SAV	2-1/2 to 3-1/2
.45-70	1-1/2 to 2-1/2

12 Gauge-Shot	Range-Feet
No. 7-1/2	700-1,100
No. 5	800-1,300
No. 4	800-1,300
No. 2	1,000-1,600
No. 00 Buck	1,800-2,700
1 oz. Slug	3,700-5,300
.410 Slug	2,700-4,200

Note: Ranges are affected by altitude, standard components, weight and design of projectile and other factors. Figures from these two charts simply give you an estimate or idea on how far projectiles can travel and to be conscious of these when selecting the proper backstop.

SHOT

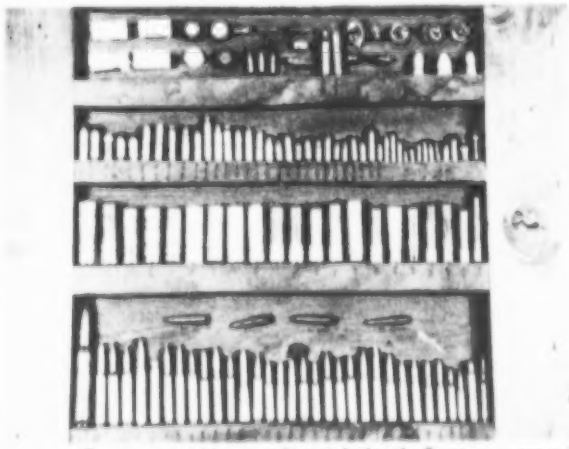
Number	Diam. In Inches	Approx. Pellets in 1oz.
12	.05	2385
9	.08	585
8	.09	410
7 1/2	.09 1/2	350
6	.11	225
5	.12	170
4	.13	135
2	.15	90
BB	.18	50

BUCK SHOT

Number	Diam. in Inches
4	.24
3	.25
1	.30
0	.32
00	.33

STEEL SHOT

Number	Diam. In Inches	Approx. Pellets in 1oz.
6	.11	317
4	.13	192
3	.14	154
2	.15	125
1	.16	103
BB	.18	72
BBB	.19	61
T	.20	53



Proper ammunition must be matched to the firearm you are using

The following is a guide which helps you select the proper size shot.

Shot Pellet Guide

Game Animal	Type of Shell	Size
DUCKS	Super Magnum or Hi-Power	Steel, 2, 4
GEESE	Super Magnum or Hi-Power	Steel BB, 1, 2
PHEASANTS	Super Magnum or Hi-Power	5, 6, 7-1/2
QUAIL	Hi-Power or Field Load	7-1/2, 8
OTHER GROUSE CHUKAR PARTRIDGE	Hi-Power or Field Load	5, 6, 7-1/2
DOVES & PIGEONS	Hi-Power or Field Load	6, 7-1/2, 8
RABBITS	Hi-Power or Field Load	4, 5, 6, 7-1/2
SQUIRRELS	Hi-Power or Field Load	4, 5, 6
WILD TURKEY	Super Magnum or Hi-Power	2, 4, 5, 6
BIG GAME	(Where and when legal)	Rifled Slug

The most important factor when selecting ammunition is to be sure it matches with your particular firearm. The best method is to buy the exact brand and size which was chambered by the manufacturer for the brand and size of your rifle or shotgun. Never mix ammunition such as carrying a brand your companion uses. Be sure to seek the advice of a knowledgeable person. Some store clerks, although they sell ammunition, may not know the differences in sizes or the type of firearm you shoot.

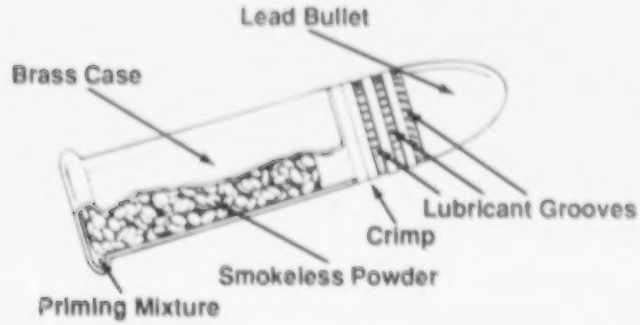
STEEL SHOT

By 1991, **steel shot** will be required throughout the United States for use in waterfowl hunting. Based on government studies and observations, there is evidence that many waterfowl die each year because of **lead poisoning**.

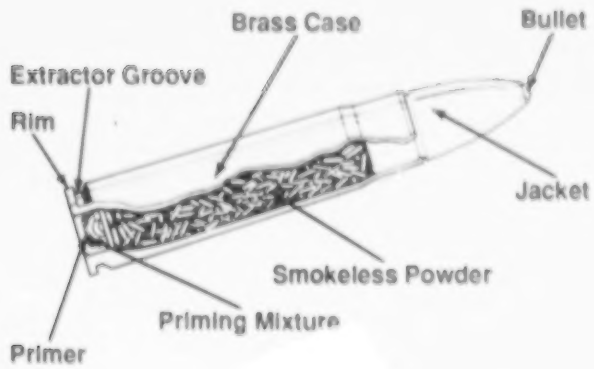
Lead pellets from traditional shot shells are picked up by waterfowl in feeding areas and digested. The result is toxic to these birds or birds which eat these birds such as bald eagles. To counteract this, conservationists have worked with the manufacturers to produce an effective alternative—steel or **nontoxic** shot.

However, steel pellets react differently than lead when shot. Each has a different weight and flight characteristic. Steel weighs about two-thirds that of lead. Steel does not deform and is not as unstable in flight. It also is much harder. It will produce a tighter pattern than will lead shot. Hunters should use steel pellets at least two sizes larger than their lead counterparts.

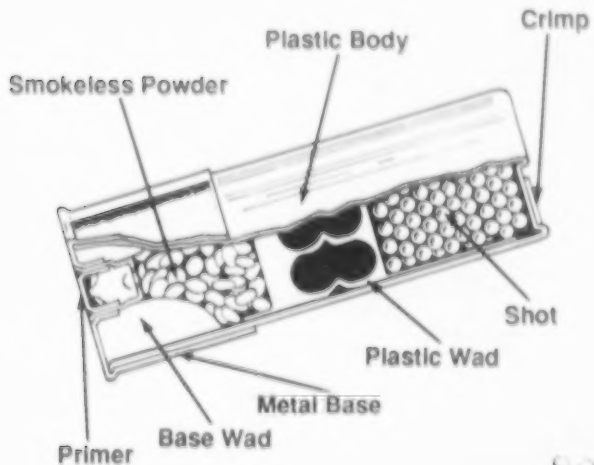
Rimfire Cartridge



Centerfire Cartridge



Shotgun Shell



SIGHTING-IN/PATTERNING

Sighting-in your rifle or patterning your shotgun is an important step in being a responsible hunter.

First, this step forces you to practice before the hunting season. Second, it insures more accurate shots. Third, it might help you to determine problems with shooting techniques. Fourth, it gives you an understanding about basic **ballistics** and trajectory. And fifth, it might help you gain confidence in your shooting ability so you can make successful shots while hunting.

All rifles and handguns should be sighted-in, especially peep or telescopic sights. One jolt could have altered sights so they no longer hit a four-foot target at 100 yards. Sighting-in means the difference between a successful shot or a miserable experience.

Basic sight-in procedures involve the same range safety principles and procedures covered earlier in this section. Your rifle should be fired from a solid bench rest with the forearm resting on a pad or sand bag. An adjustable shooting tripod with sand bags is probably the best option. You must have vision and hearing protection. You should also have a spotting scope and targets, tacks or tape.

Sight-in instructions are printed on most targets available from retail outlets or the manufacturers. The basic steps involve firing several (usually at least three) shots carefully and consistently. If the bullets form a relatively small group of holes on the target, but not at the intended spot on the target, the sights will have to be adjusted.

When adjusting peep or telescopic sights, you must adjust your rear sights or dials a certain number of **minutes-of-angle** or clicks a certain direction. One minute-of-angle is one inch of bullet impact or scope adjustment at 100 yards. The direction should be the same direction you want your grouping to move on the target. To move shots back and forth is referred to as **windage**. Moving shots up and down is **elevation**. You must choose the appropriate dials to affect these movements in your sights so that the shots will move on the target.

Specific instructions about trajectory and what fractions or inches you should be above the bullseye at 25, 50 or 100 yards are usually included on sight-in targets. Also, you should consult a ballistic chart or get help from an experienced shooter. But nothing takes the place of safety and basic firearm shooting techniques.

Patterning your shotgun is a different process than actually sighting-in. The purpose of patterning is to gain an understanding of how many pellets strike a target at a given distance. It tells you if you are shooting consistently off center. It allows you to check for consistent "holes" in your pattern. These are areas inside of the circle of pellet hits which show

fewer hits. It also helps you gain overall confidence and shooting ability. It might tell you to try other loads than the ones you are accustomed to using.

When patterning, you can buy standard targets from retail sporting good stores. However, all you really need is a large sheet of paper resembling butcher-type paper. You need a target frame which is sturdy and can last through many shots. You need a safe backstop and an area in which to shoot. Finally, you will need a pencil, some stakes and a measuring tape.

The basic steps to patterning are to shoot a shot, preferably at a blank paper target. You should start at a close range such as 20 yards. However, a pellet count chart might reflect the standard of 40 yards. Pellet charts change depending on whether you are shooting lead or steel shot. The chart compares shot sizes with weight of shot in ounces. The figures on the chart reflect the pellets per weight of shot. This will give you the total number of pellets which could potentially hit the target.

From 40 yards, your shot should be "aimed" towards the center of the target. Once taken, unload and go down range to look at your target. (Remember, you must follow all range safety rules such as not going down range in the presence of other shooters until the command is given.)

Draw a 30-inch circle around the **center of impact**, that area where the pellet hits are most numerous. Repeat this procedure several times with other blank targets. Do not worry about pellets which hit outside your circle. Of at least three targets, choose two which have the best concentration of pellets. Mark with an "X" over each hit inside the circle on both targets. Take the number of hits per target divided by the number of pellets per size and weight on the pellet chart. The

Sighting-in prior to going hunting

final number will be a percentage of shot which are hitting inside the circle.

Example: Size 4 steel shot, 1-1/2 oz. of shot.

215 Number of hits inside a 30-inch circle at 40 yards.

285 Number of pellets inside the shotshell

215 equals 75 percent.
285

A full-choke, 12-gauge, 3-inch load, should expect a 70 to 80 percent total in the above example. A modified-choke should show from 60 to 70 percent. An improved-cylinder should reflect 40 to 50 percent.

Realize that there is more to sighting-in and patterning than has been given to you in these last few paragraphs. These are only the basics.

When sighting-in there is much more knowledge needed to be as accurate as you can possibly be. Read as much as you can about the subject. Learn about factors which can affect your sighting such as **Parallax**. Learn what might affect your accuracy such as proper bedding of your gun. Learn, too, about how environmental conditions such as heat mirage and wind can affect your vision or shot placement.

To learn more about these subjects will take more time, experience and practice than you will get in this basic course. This is why hunting is a lifetime sport and it represents a lifetime of learning.

Steel shot patterning target

83

DEFINITIONS

SELF-CONTROL—to demonstrate or regulate actions so that, in hunting, you can be safe, careful and show restraint and good judgment.

ACCURACY—ability to put your bullet or arrow where you want to.

VITAL AREA—those areas on a game animal which will cause a quick death if hit by impact or cut.

STOCK—that feature which connects to the action and barrel making it possible to hold, aim and shoot a firearm.

FOREARM —portion of the stock extending under the barrel in front of the receiver.

SAFETY—mechanism which blocks the hammer, trigger or sear (or combination) to prevent accidental discharge of a firearm. Note: can fail and does not replace safe firearm handling skills

TRIGGER GUARD—piece which surrounds and protects the trigger.

BERMS—hills of dirt behind or to the sides of shooting lines.

BAFFLES—overhead or side structures which prevent shots from going certain directions; designed for range safety in the case of errant shots.

FALL-OUT ZONE—restricted zone where bullets or shot could land.

DAMASCUS BARREL—barrel made from welded iron and steel twisted around a mandrel.

PNEUMATIC—compressed air or gas system.

RIFLE —a shoulder gun with spiral grooves cut into the inner surface of the barrel.

SHOTGUN—smooth bore guns designed to hit moving targets.

MUZZLE—the end of the barrel where burning gas and projectile(s) escape.

AMMUNITION—anything hurled by a firearm.

BARREL—part of the firearm in which ammunition travels.

BORE—hole bored lengthwise through the gun barrel.

RIFLING—spiraled grooves cut inside the inner surface of the barrel.

CALIBER—measurement of cartridge ammunition or rifled barrel width.

GAUGES—measurement of shotshell ammunition or smooth bore barrel width.

ACTION —those parts on a firearm which load, fire and eject ammunition.

MAGAZINE—that feature on a firearm which stores extra ammunition which can be fed by the action to the chamber.

CHAMBER—the end of barrel where the cartridge or shotshell sits ready for firing. (In a revolver, the chamber is the cylinder which sits in front of the barrel at the time of firing.)

FALLING-BLOCK—action which allows a shooter to feed ammunition because of a block of metal falling out of the way, exposing the chamber.

BREAK-OPEN—action which allows a shooter to feed ammunition directly into the chamber because of a hinge which exposes the chamber(s).

LEVER—action which feeds ammunition as a result of a shooter operating a lever or trigger guard handle.

PUMP—action which feeds ammunition as a result of a shooter moving a forearm backwards, then forwards.

SEMI-AUTOMATIC—action which feeds ammunition automatically from the magazine to the chamber after each shot.

TRIGGER —that mechanism or finger-lever which releases the firing mechanism in a firearm.

DOMINANT EYE—eye which dominates vision when both eyes are open.

SIGHTS—front, middle and or rear mechanisms which allow the shooter to align the barrel with a target.

RETICLES—fine lines, wires or "crosshairs" and posts inside a telescopic sight (optic).

SIGHT ALIGNMENT — aligning the front and rear sights to the target.

SIGHT PICTURE—what you see after aligning front and rear sight with target.

RANGE—distance a bullet or shot can travel.

FOLLOW THROUGH—motion after the shot which resembles the motion before the shot.

PLUGS—item which prevents the storage of additional ammunition in the magazine.

BUTTPLATE—protective plate fastened to the butt of a shoulder firearm.

CHOKE—thickening of the muzzle end of the barrel which constricts shot leaving a shotgun barrel.

LEAD—distance ahead of a moving target.

REVOLVERS—handguns having a rotating cylinder.

SINGLE-ACTION—revolver in which the hammer must be manually cocked before each shot.

DOUBLE-ACTION—revolver in which the trigger can operate the hammer.

CYLINDER—storage unit for revolver ammunition.

HALF-COCK—hammer held between closed and full-cocked positions by means of a sear.

FULL-COCK—hammer held in the most open position by means of an additional sear (if gun has a half-cock position).

SIGHTING-IN—process which determines rifle and handgun accuracy.

PATTERNING—process which determines shotgun accuracy.

BALLISTICS—a study of projectiles in flight and action of their propellants.

CARTRIDGE—ammunition used in modern-day rifles and handguns.

SHOT SHELL—ammunition used in modern-day shotguns.

PRIMERS —compound in a cap or mixture which explodes to ignite powder in modern-day ammunition.

CENTERFIRE—primer is located in the center of the base on rifle, shotgun or handgun ammunition.

RIMFIRE—primer mixture is located in rim in the base of some rifle or handgun ammunition.

SMOKELESS POWDERS—powders used in modern-day ammunition.

DRAMS EQUIVALENT—number which gives the weight of black powder used in the past to obtain similar speeds of modern-day smokeless powders.

BULLET—projectile in cartridges.

JACKET—hard metal covering on bullets which affects flight and impact characteristics.

STEEL SHOT—shot shell pellets used in hunting, especially for waterfowl.

LEAD POISONING—death caused by lead salts or ingestion, especially in waterfowl.

NONTOXIC—not harmful or poisonous.

MINUTES-OF-ANGLE—one inch of bullet impact or scope adjustment at 100 yards, two at 200 yards, three at 300 yards, etc.

WINDAGE—left and right movement of bullet impact or scope adjustment.

CENTER OF IMPACT—the precise center of any group of shots on the target. (In hunting the goal is to have the center of impact the same as the center of the vital area.)

PARALLAX—optical trick which is an optical bending of the telescopic crosshairs in relation to the target.

CHALLENGE—Your challenge is to learn as much as you can about your particular firearm(s). It is amazing how much hunters do not know about their tools of the trade. There is a lot to know about ballistics, unique designs, etc. However, safety and basic marksmanship stays the same throughout. Your shooting skills should reflect these above all other knowledge.

ASSIGNMENT—Sight-in your firearm(s) and pattern the shotgun(s) you use. Many hunters skip these important steps. It is surprising the number of individuals who don't take these steps or buy firearms or bows in the week before they go hunting. Be sure to sight-in or pattern in the presence of a safe, experienced shooter.

EXERCISES/REVIEWS

1. Name the three basic parts of all firearms:

_____

_____

_____

2.A. Name 5 actions common to modern-day rifles:

_____

_____

_____

_____

_____

2.B. Three common to modern-day shotguns:

_____

_____

_____

2.C. Three common to modern-day handguns:

_____

_____

_____

3. Name four common chokes in shotguns:

_____ (widest spread)

_____ (wide spread)

_____ (medium spread)

_____ (tightest spread)

4. List a specific rule of safety in each category:

A. Home _____

B. Storage _____

C. Transportation _____

D. Field _____

E. Range _____

HELPFUL REFERENCES

National Rifle Association—has brochures, pamphlets, programs and magazines which will help you understand rifles, shotguns, handguns, and ranges, 1600 Rhode Island Ave., N.W., Washington D.C. 20036 (for materials, order form or guide).

National Shooting Sports Foundation—has literature and brochures about shooting sports and safety in the home, field and in transport, 1075 Post Road, Riverside, Connecticut 06878 (for materials, order form or guide).

Federal Ammunition Guide—Federal Cartridge Corporation, 2200 Foshay Tower, Minneapolis, Minnesota 55402.

Winchester Ammunition Guide and Targets—Winchester Ammunition, Olin Corporation, East Alton, Illinois 62024.

Daisy Shooting Education —Manufacturing Company, Special Market Programs, P.O. Box 220, Rogers, Arkansas 72757-0220, (501) 636-1200.

Amateur Trapshooting Association —Vandalia, Ohio 45377.

National Skeet Shooting Association—P.O. Box 28188, San Antonio, Texas 78228.

United States Sporting Clays Association—50 Briar Hollow, Suite 490 East, Houston, Texas 77027.

The Book of Rifles—W. H. B. and Joe Smith, 4th Edition, Castle Books, New York; Stackpole Company and the National Rifle Association.

Air Gun Digest— R. Beeman, 1977. DBI Books, Inc., Northfield, Illinois.

The Anatomy of Firearms—L. R. Wallack, 1965. Simmon and Schuster, Inc., Rockefeller Center, 630 Fifth Avenue, New York.

Crosman Safe Shooter's Book—1977. Crosman Arms, Fairport, New York 14450.

Properties of Sporting Ammunition and Recommendations for its Storage and Handling—Sporting Arms and Ammunition Manufacturer's Institute, 420 Lexington Ave., New York, NY 10017.

Sporting Guns—Octopus Books, 69 Clovener St., London, England.

Shotgun Shooting Facts—Thomas Gough, 1978. Winchester Press, Inc., 205 E. 42nd. St., New York, NY 10017.

Shotgunning: The Art and the Science—Bob Brister, 1976. Winchester Press, Inc., 205 E. 42nd St., New York, NY 10017.

6 PRIMITIVE SPORTING ARMS
...Understanding the Basics

OBJECTIVES

- To give you an understanding of the right and wrong ways to handle and care for primitive sporting arms.
- To review a general history of sporting arms.
- To review the basics of muzzleloaders and archery equipment, ammunition and arrow parts and functions.
- To allow you to demonstrate safe skills when handling muzzleloaders or bows and arrows (handling, field or live-firing exercises as provided by the instructor).
- To review muzzleloader and bowhunting loading and shooting fundamentals.

INTRODUCTION

Primitive sporting arms, although invented and used long ago, are used still by modern-day sportsmen. Archery, the use of bow and arrow, dates back tens of thousands of years. Black powder dates back centuries. Yet, these tools represent a certain type of challenge and limitation to today's sportsmen. Primitive shooting sports provide recreation and physical exercise. They give today's hunters a sense of tradition and culture.

MUZZLELOADING

HISTORY

The first firearms were tubes closed at one end. Mostly, these tubes were made of metals such as brass or cast iron. But some ancient "guns" were made of bamboo, tough paper, wood and copper.

The earliest gun powders were made of saltpeter, sulphur, charcoal and "other" substances. The resulting mixture of **black powder**, as it is called today, was ignited using a lighted wick or match. The "explosion" caused by the fast-burning powder was used to launch metal objects or arrows for some distance.

Much of the history of guns and powder in Europe came during the 1300s. One of the main guns during that period was a hand-held cannon. This "handgun" was clumsy because the shooter had to hold it, aim it and light it at the same time. Proper aim was not possible.

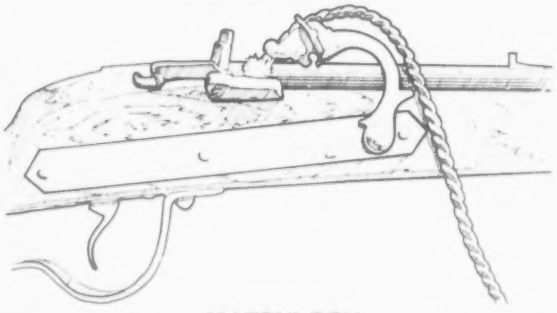
FOUR TYPES OF IGNITION SYSTEMS

Early in the 1400s, the **matchlock** was developed. The matchlock could be held with two hands. When the "trigger" was pulled, a lighted wick could be lowered into a **priming pan** containing gun powder. The trigger along with the jaws which held the wick formed an "S"-shaped lever called the **serpentine** because of its snake-like appearance.

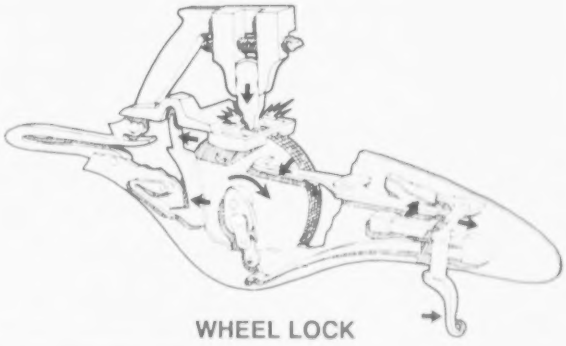
The priming pan was an important development. It was located next to a tiny hole drilled into the **breech** or closed end of the barrel. After the priming powder was ignited, it caused a chain reaction through this **vent hole** which lit the main charge.

European man also began to improve the shape of guns and the speed of these **ignition systems**. New designs enabled them to shoulder guns better. New styles provided metal designs fit for a king.

EARLY FIREARMS



MATCHLOCK



WHEEL LOCK

One such style used a new ignition system known as the **wheel lock**. Instead of a wick, it used a rough-edged steel wheel. Once the trigger was pulled, a coiled spring forced the wheel to spin against a piece of iron pyrite. The resulting sparks flew into the priming pan under the wheel. Several early firearms contained both the wheel lock and the matchlock systems.

In the late 1500s, a new ignition known as the **flintlock** arrived on the scene. As with the two previous guns it came about by putting pieces from the old systems with other types of natural or new materials.

The flintlock contains a piece of flint which is held in the jaws of a **hammer**. When the trigger is pulled the hammer falls against a steel surface sitting over the priming pan. Like the wheel lock, sparks are created which fall directly onto the powder in the priming pan. The steel pan cover or **frizzen** falls out of the way as a result of the striking hammer, thus exposing the pan powder.

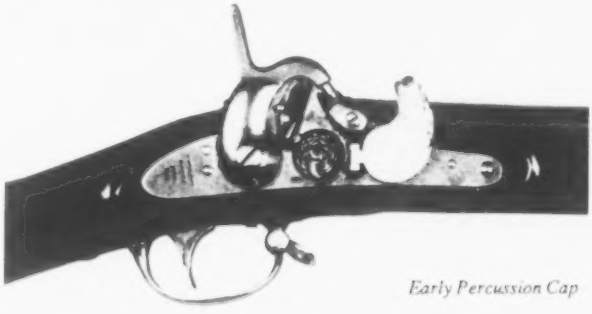
In the 1600s the French and English made many improvements to the flintlocks including rifles, pistols, and **fowling pieces** or shotguns. American colonists needed rifles for more accurate shots in warfare. However, since they could not get them from the British, they started developing their own.

With the help of Swiss and Germans who brought over Continental rifles, colonists made new long guns known as "Kentucky" or "Pennsylvania" rifles with very different features. The long, slender barrels of these rifles gave colonists much more capability such as being able to aim better.

However the white man traveled West, he needed shorter barrels and heavier loads as he chased animals such as buffalo and elk. News traveled back to the "Lancaster" gun makers who constructed new plains rifles, offshoots of the Kentucky patterns. Tennessee mountain men brought their "Tennessee" rifles with them in search of new lands. Jake and Sam Hawkins made their plains rifle so famous that it became a popular frontier name.

In 1799, Edward Howard discovered an ignition process when he was trying to find a substitute for gun powder. He noted that a certain chemical, **mercury fulminate**, could be exploded by the blow of a hammer.

Alexander Forsyth, a Scottish minister, patented the fulminate ignition system in 1807 and is considered the father of the **percussion lock** system.

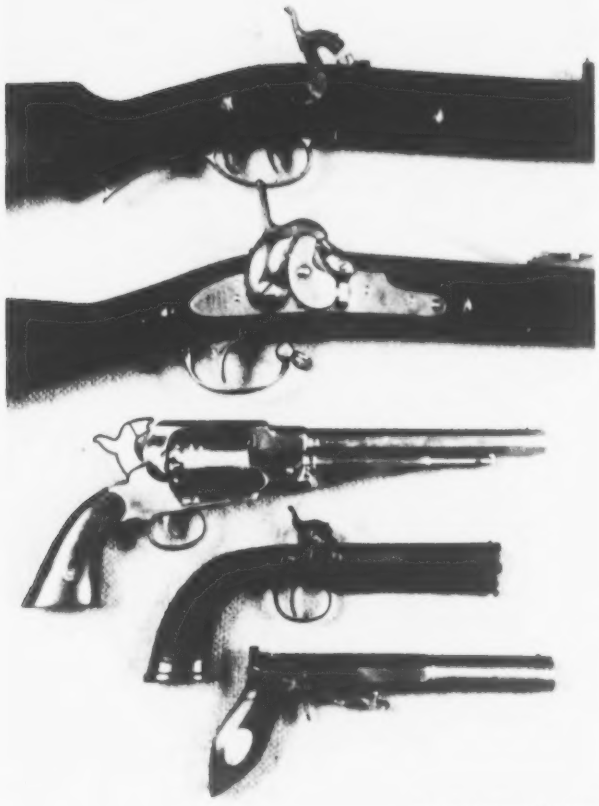


Early Percussion Cap

Flintlock

Percussion Cap

Modern-Day Muzzleloading Ignition Systems



Types of Muzzleloaders

The early percussion locks used pellets of fulminates (salts) inside a metallic foil cap placed over the vent hole. Later, a metal cap was placed over a **nipple** which contained the vent hole leading to the breech. When the hammer struck the cap, the resulting flame ignited the main charge. Today, these guns are known as caplocks or percussion caps.

An interesting development came in 1836 when Samual Colt was granted a patent for his multiple-shot designs. These percussion cap revolvers led the way to modern revolvers and made Colt a common gun name even today. Basically his handgun could fire five or six separate loads with each pull of the hammer. Each load was packed into its own chamber.

The percussion cap also paved the way to self-contained cap systems called cartridges as you have read about in Chapter Five of this manual.

TYPES OF MUZZLELOADERS

Muzzleloader is the term given to early firearms because they are loaded from the muzzle or open end. Today, muzzleloaders enjoy a wide use for both historic and sporting purposes. Matchlocks and wheel locks have historical values because they are usually rare and valuable. They also may be unsafe to use and should not be fired by unknowing shooters. Flintlocks and percussion caps are most popularly used in shooting competitions and for hunting. They are generally less expensive, lighter, more reliable and easy to load and maintain.

If you have a muzzleloader, make sure you determine whether it is an antique or a replica. Have the gun examined by a professional gunsmith if you are uncertain of its value or if you want to shoot a muzzleloader you did not purchase.

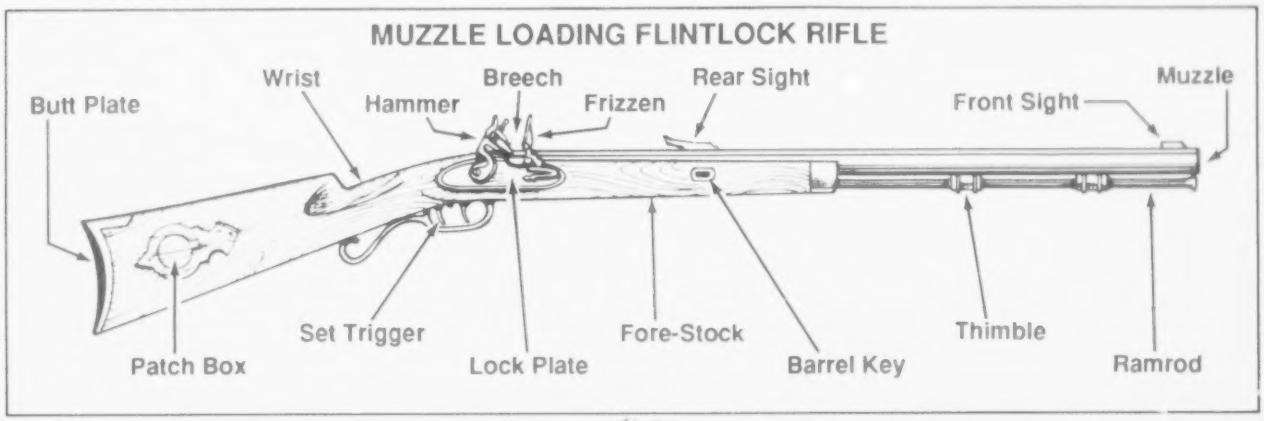
Rifles are the most common muzzleloaders and are available in a wide choice of styles and periods. As we have reviewed, rifle refers to "rifling." However, early long arms included military muskets, which were full-stocked rifles, but smoothbored. Rifled muskets were identical but had the rifled barrels.

Shotguns can have either a single barrel or double barrels joined side-by-side. When loading the double-barrel, it is critical that the shooter does not accidentally put the two loads down the same barrel. The result can be dangerous!

Double-barrels usually have two locks, one for each barrel. This allows the shooter to fire each separately before the gun is reloaded. To do this, most double-barrels were designed with two triggers.

Muzzleloading handguns came in two common forms—the pistol and revolver. Pistols are mainly single-shot. However, the revolvers contain multiple-shot chambers as described in the early Colt models.

The danger with revolvers involves **chain firing**. When the chamber round is fired it produces sparks which could accidentally ignite loads in any of the other cylinders. For this



reason, you must be sure to protect each load in the cylinder with a coating of grease. This prevents the spark from entering the open end of the other cylinders.

AMMUNITION

Muzzleloading projectiles come in three basic types—round ball, bullet and shot. Most are melted and cast from pure lead.

Rifle round balls should be loaded with a patch. Bullets are usually conical in shape and are lubricated before loading. Some use a paper patch as well. Shot is loaded above the wad and below the "over-shot wad." These are forerunners of the wad and crimp of a modern day shot shells.

Balls are used mainly for target practice but can also be used for hunting. Bullets are preferred for hunting because they are generally more accurate, but only for a certain range. Some are heavier grained and might lose accuracy at longer distances. Shot pellets are designed to spread and hit moving targets, just as with today's shotguns.

Black powder is the only type of powder which should be used in muzzleloaders. However, a synthetic substitute called **PYRODEX** also may be used. Be sure NOT to use modern-day smokeless powders in black powder firearms. Smokeless powders may be similar in color but they have different burning rates and pressures. Smokeless powders could cause serious injury if used in muzzleloaders.

Black powder is made of potassium nitrate (saltpeter), sulfur and charcoal. When ignited, it causes a dense cloud of white smoke. It comes in four sizes or **granulations**.

Fg	— Coarse grain typically used in cannons, rifles larger than .75 caliber and 10-gauge shotguns or larger.
FFg	— Medium grain typically used in larger rifles between .50 and .75 caliber, 20-gauge to 12-gauge shotguns and pistols larger than .50 caliber.
FFFg	— Fine grain typically used in smaller rifles and pistols under .50 caliber and smaller shotguns.
FFFFg	— Extra-fine grain typically used as a priming powder in flintlocks.
PYRODEX	— Black powder substitute which can be used in equal amounts, but loading may vary. Be sure to consult instructions or your gun dealer for procedures. It is not recommended for use in flintlocks because it may not ignite from sparks as easily.

Accessories - Along with projectiles and powder, a muzzleloader uses many accessories. These items are needed to maintain, load or unload a muzzleloader. Accessories can be originals, original replicas or modern-day items each serving a specific purpose. The muzzleloader may use nothing except originals or their replicas to reenact the traditions of our forefathers such as the mountain men.

The purse-like bag which holds the accessories is called a **possibles bag** because you store "everything you possibly need" in one. The original mountain men and trappers made these of leather. If you don't have the bag, a shooter's box or hunting pouch may also be used to store accessories.

The following items are accessories used by today's muzzleloaders:

Powder Horn or Flask—stores and keeps dry the powder for the main charge.

Priming Horn or Flask—stores and keeps dry the powder for the priming charge (pan powder—FFFFg).

Powder Measure—calibrated for different measures and used to load powder for main charge.

Marked Ramrod—wooden or synthetic rod used to load main charge to breech.

Ball Starter—one end of short starter used to seat ball or bullet.

Short Starter—used to start the ball or bullet down the barrel from the muzzle end.

Patching—pre-cut or cut cotton patch used to lubricate and protect ball as it travels length of barrel.

Patch Knife—a small, sharp knife or circular cutter used to cut patching around the seated ball.

Percussion Caps—explosive caps used over nipples of caplocks to ignite main powder charge when struck by the hammer.

Capper or Cap Box—used to carry or load extra caps.

Nipples (extra)—vented screws which hold percussion caps.

Nipple Prick—used to clean vent if dirty or clogged.

Nipple Wrench—used to change nipples when vent is clogged or dirty.

Flints (extra)—knapped or edged pieces of flint used to produce sparks in flintlocks.

Knapping Hammer—used to hone edge on flint before use.

Jag—used on end of ramrod to patch and clean the barrel.

Ball Screw (puller)—threaded hold screw used on end of ramrod to extract lead ball in breech after a misfire occurs.

Worm—used on end of ramrod to extract patch stuck in barrel.

Patch Box —inlaid box used to store accessories or extra loads in stocks of some muzzleloaders.

Shot Pouch—leather pouch used for carrying shot.

Loading Block—wooden block drilled with holes used to carry pre-patched balls.

Quick Starter or Combustible Cartridge—pre-made loads which quicken the loading process by loading the charge all at once or with fewer steps.

Shot Measure or Dipper—used to measure and load shot used in muzzleloading shotguns.

Muzzleloading Accessories

***NEVER** pour powder directly into muzzle from powder horn*

MUZZLELOADER SAFETY

Basic safety rules must be followed when muzzleloaders are being used. Of course, all rules of safe firearm handling apply as well.

1. Use only black powder or Pyrodex in a muzzleloading firearm.
2. Always point the muzzleloader down range or in a safe direction.
3. Never **prime** or cap a muzzleloader until you're ready to fire.
4. Never bring a loaded muzzleloader into your home, camp or vehicle. After use, a muzzleloading firearm should be **discharged** into the ground or other suitable backstop.
5. Never climb a tree with a primed or capped muzzleloading firearm. Never raise or lower a primed or capped muzzleloader from a tree stand by a haul line.
6. Be sure the **half-cock** and full-cock notches are working properly before loading.
7. Always wear shooting glasses and ear protection when shooting a muzzleloader. You should also wear a long-sleeve shirt to protect your arms.
8. Never smoke while shooting or loading or when near a powder horn or flask. When muzzleloading, avoid having matches or items such as cigarettes close at hand.
9. Never load directly from a horn, flask or other container. A loose spark or glowing ember in the barrel can cause the powder to explode. Load only one charge at a time from a calibrated measure.
10. Never leave a **charged** muzzleloader unattended. If the gun is not charged, or loaded, place your ramrod or loading rod in the barrel before leaning it against a good rest. This will prevent debris from falling down the barrel and blocking the **touch hole** (vent hole to the breech).

LOADING MUZZLELOADERS

Loading or charging a muzzleloading firearm presents some special dangers, because it requires the muzzle to be pointed upward. It is the only type of firearm in which the shooter gets close to the muzzle end or has it pointed somewhat towards the shooter's direction.

Before loading be sure to determine if the muzzleloader is loaded by using a marked ramrod which has an "unloaded" or empty marking. If you are not sure, let an experienced muzzleloader or gunsmith help you out.

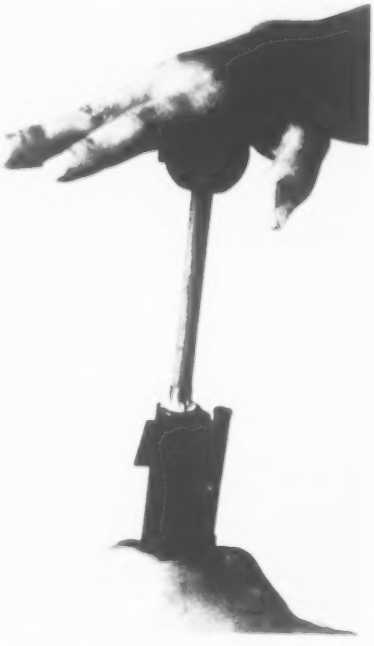
BEST COPY AVAILABLE

STEPS IN LOADING A MUZZLELOADING RIFLE

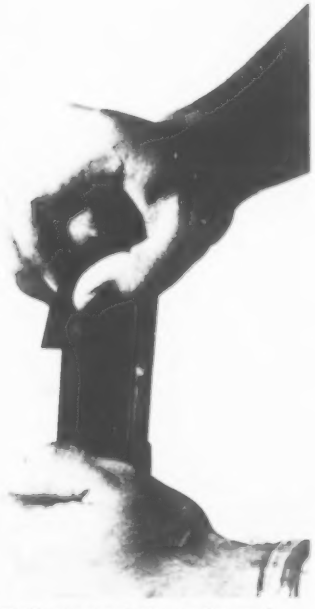
1. Measured powder

2. Load powder

3. Ball starter



4. Short starter



5. Ball started down barrel

6. Ramrod-seated ball atop powder charge

Dry out the inside of barrel because black powder residue might have attracted moisture. To do this, run a dry patch down the barrel. Then snap at least two caps (percussion cap), pointing the gun in a safe direction. Point the muzzle towards a blade of grass or something which shows movement when the caps are fired. This will let you know that the vent and bore are clear of any obstructions. After the chamber has been dried out, pull the hammer to the half-cock position.

For rifles, position the butt on the ground between your feet. You should be facing the underside of the barrel. The muzzle should be pointed upward and away from your body. Never work directly over the muzzle.

Measure out the proper amount and type of powder using the calibrated measure. Replace the powder horn's cap and swing the horn to the other side of your body. Pour the powder into the barrel from the measure. Tap the barrel to make sure all powder falls to the breech end.

Using a lubricated precut patch, center the patch over the muzzle. You can lubricate patches using a manufactured lubricant or saliva by placing it in your mouth. Lay the ball on the patch, lay the **sprew** or flat side up, if ball comes with this feature. Then, seat the ball and start it down the barrel using the short starter.

Use the longer ramrod to push the ball the rest of the way making sure it is well seated (pressed down) on the powder charge. Push the ramrod in short strokes, gripping it just a few inches above the muzzle. If you use a longer stroke, you might accidentally snap the rod and injure or puncture your hands or arm. Your ramrod should be marked to show when the ball is properly seated over a specific load such as 70 grains of FFFg powder.

When you're ready to safely fire the muzzleloader, place the percussion cap on the nipple. Be sure that your surroundings and your back stop is safe. Then aim and fire. After firing, place the hammer in the half-cock position and swab the barrel to remove sparks that might be inside.

When priming a flintlock, pull the hammer to a half-cock position and open the priming pan cover. Check your flint, making sure it is setting tight and properly adjusted. Insert a vent pick or fine wire into the barrel's touch-hole to make sure the opening is clear. With your priming horn, fill the pan about three-fourths full of FFFFg powder. Reclose the frizzen and pull the hammer to full cock when you are ready to safely fire the shot.

Sometimes, a muzzleloader will not fire immediately when the trigger is pulled. This is known as **hang fire** and requires great caution, because the gun might fire some time after the cap or flint created the initial sparks. Keep the gun pointed in a safe direction, preferably down range. Never take such a gun where it could injure someone or damage property should it fire. If a muzzleloader does not fire properly, get help from an experienced shooter to unload it using a ball screw.

Loading a pistol involves the same steps as loading a rifle. However, loading a revolver involves loading multiple chambers. Each chamber is protected with a clump of grease so that chain firing is prevented.

Be sure to read all necessary instructions before loading muzzleloading revolvers and shotguns, and review those procedures for rifles and pistols.

CLEANING MUZZLELOADERS

Firing a muzzleloader leaves a corrosive (rust-causing) paste inside the barrel. Accuracy is best if the barrel is swabbed with a moist patch after each shot. The buildup of residue, called **fouling**, can be so heavy that loading becomes difficult. The patches or cleaning rags used to wipe the barrel must be the correct size and should be made of cotton or approved synthetic materials. Be sure to get recommendations from retailers who sell you a muzzleloader.

A muzzleloader must be thoroughly cleaned after each shooting session. The residue created by firing either black powder or Pyrodex can damage the barrel if left overnight.

Clean the gun's lock periodically. Normally it is held in place by one or two bolts. Once the lock has been removed, scrub both sides with an old toothbrush and hot water. Make sure the entire lock is completely dry, then lightly oil and replace it.

Keep cleaning chemicals away from the wood on a gun. The stock can be cleaned with water or commercial stock cleaner. After cleaning, the stock should be dried and given a light coat of stock oil or wax.

You can learn more about muzzleloaders from a local club or from the National Muzzleloading Rifle Association. A local muzzleloader retailer or experienced black powder shooter also can help you.

Muzzleloader Hunting

BOWHUNTING

The use of the bow is recorded as far back as 3000 B.C. Among the ancient cultures who built empires on this tool, the Egyptians may have been the first famous archers. Their bows were shorter than a man, with arrows of two feet or more. Bronze was the usual material for arrowheads.

Although the Roman Empire had large numbers of horsemen/ archers in their ranks, legendary bowmen also appeared in the Far East. Among them were Attila, King of the Huns, and Genghis Khan.

Some early bows were made of composites of horn, wood and sinew and were "C" shaped. These were similar to today's laminated bow in some respects. When shooting these bows, the Turks would pull the string with a ring held around the thumb. One particular bow had a draw weight of around 100 pounds. The arrow could be cast farther and penetrate better than the English longbow. The longbow may have been brought to England by the Norsemen. The longbow was five to six feet in length and was usually made of yew.

In 1300, the legend of Robin Hood emerged and is still popular in today's folklore. The legend and stories have been debated, but his character made the longbow popular in a romantic sort of way.

American Indians are also symbolic when talking about people who use bows and arrows. Their bows were crude and did not have much cast, however, it was their excellent hunting skills which should be noted.

European settlers brought their skills to America and contributed to the development of bow and arrows in the United States. However, little is mentioned about this era.

In 1828, the United Bowman of Philadelphia, the first organized archery club in the United States, was founded. In 1879 the **National Archery Association** was started in Chicago. The formation of this association also initiated the first U.S. sponsored tournament in 1879.

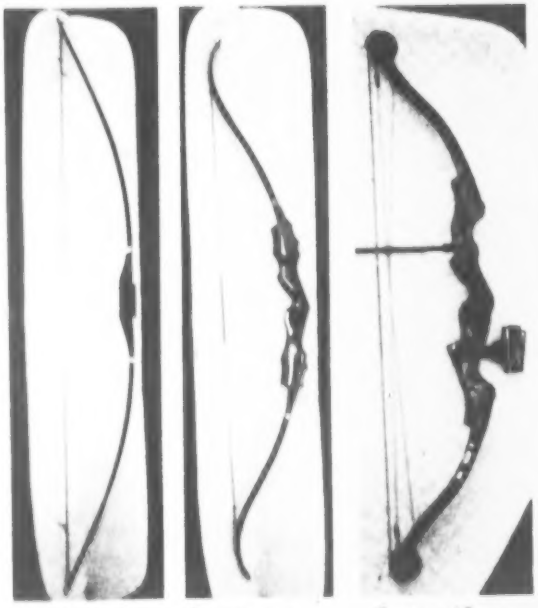
Publications by Dr. Saxon Pope and Art Young spurred early interest in bowhunting. People like Howard Hill and Fred Bear became known by industry as well as by early bowhunters. Bowhunting did not really take off until the 1950s and 1960s as hunters understood more about this sport and about newer bows which were developed.

One such bow was the compound bow patented first by Holless W. Allen. Unlike the recurve and longbows, a shooter had the advantage of holding less weight at full draw. But, regardless of the history and type of bow, bowhunting gives today's hunter a new avenue from which to pursue game.

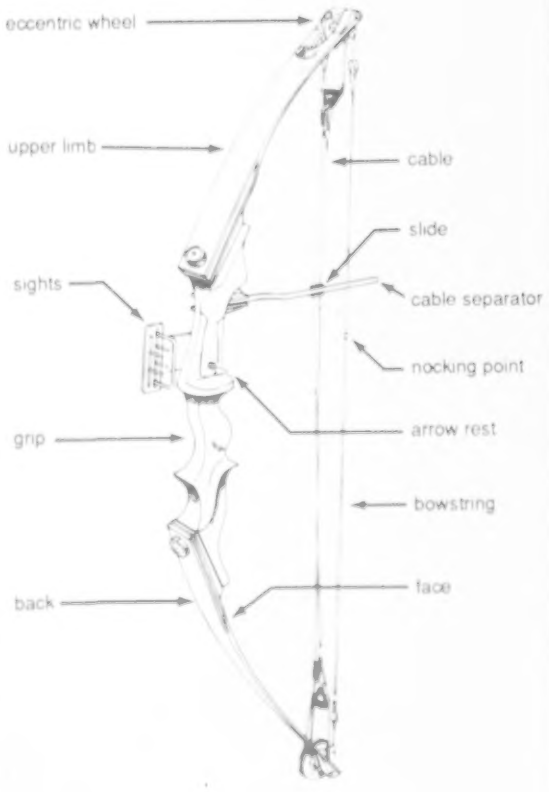
Like other sports, the bowhunter must first acquire the knowledge and skills necessary to be a safe and responsible bowhunter.

BOWS AND THEIR PARTS

Modern bows can shoot **arrows** more than 200 yards, at speeds more than 200 feet per second (135 miles per hour). All bows can be dangerous at any **range** and should be treated as



Longbow *Recurve Bow* *Compound Bow*



93

such. However, the bow is a short-range hunting tool. Shots are usually limited to 40 yards or less. At this range, the arrow **penetrates** and can even pass through an animal.

Modern hunting bows fall into four classes—longbow, recurved, compound and crossbow.

A longbow has straight **limbs** that form an arc when strung.

A recurve bow is much like the longbow, but the limbs curve back away from the belly of the bow.

The compound bow is the most popular hunting bow today. There are many styles of the compound, but they work basically the same. Using pulleys and cables attached to the limbs, the compound is easier to hold at **full draw** (pulled completely back) and can propel an arrow faster than either a longbow or recurve.

Crossbows have rifle-like stocks and shoot **bolts** which are short arrows. In Texas crossbows can only be used by persons with upper limb handicaps to hunt certain game species during specific seasons (be sure to check the current hunting guide for specific restrictions).

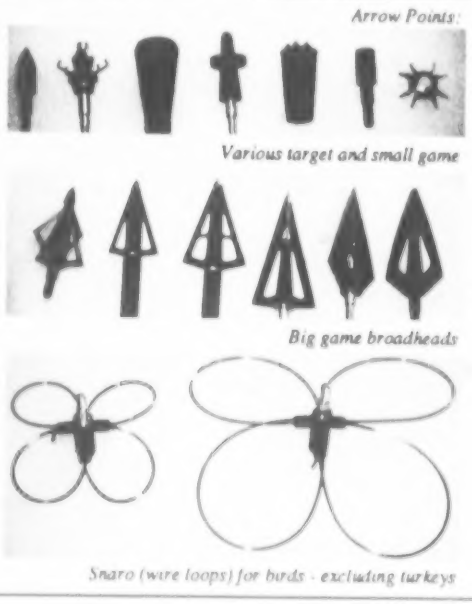
Hunting bows come in different **draw weights**. Draw weight, the force it takes to pull the bowstring back completely, is measured in pounds. Hunting bows usually have a minimum draw weight required by law but most are between 50 and 70 pounds. The compound bow's biggest advantage over the longbow and recurve is its draw weight features. The first half of the draw is at the bow's normal draw weight. The second half of the draw, the **holding weight** at the **anchoring position**, can be as much as 75 percent less.

For example, a compound bow that has a draw weight of 60 pounds and a holding weight of 50 percent less would require the shooter to exert only 30 pounds of pressure to hold the bow at full draw. This allows the bowhunter to hold at full draw longer with less strain.

Most modern hunting bows are made of wood, fiberglass, metal, graphite or a combination of these materials.

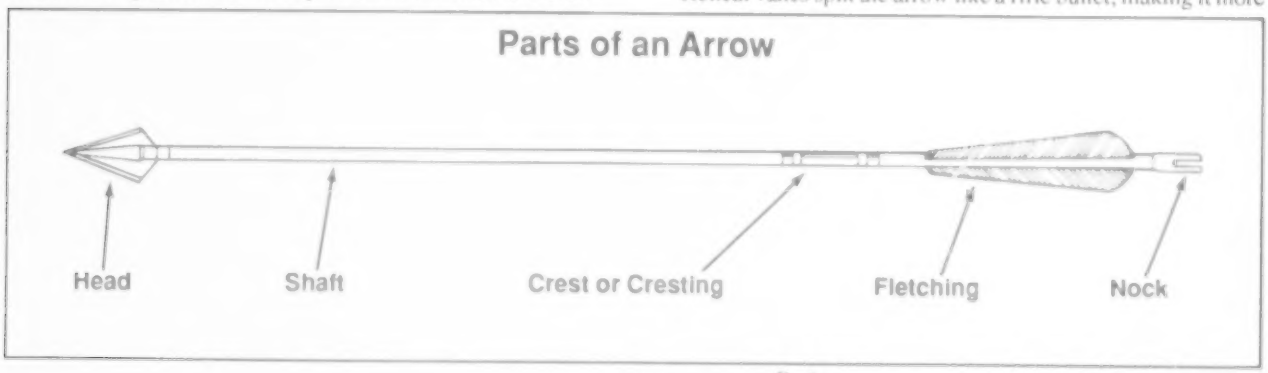
ARROWS AND THEIR PARTS

Arrows are made of wood, aluminum, fiberglass or a fiberglass and graphite mixture. The choice of arrow is up to the individual. Aluminum and fiberglass are more durable, but more expensive than wooden arrows. The most important part of purchasing arrows is to buy shafts that match the draw weight of the bow. Bows of different draw weights require arrows of different stiffness, or **spine** weight. An arrow that is spined too lightly might bend or break when released. An arrow that is too heavily spined might show poor performance in flight. Just as with firearm ammunition, bowhunting ammunition must match the sporting arm or bow.



Arrows also must be the right length for the shooter. A quick way to determine the proper length of arrow is to hold one end of a yardstick against your chest at shoulder level, with the other end between the fingertips of both hands held straight in front. The ends of the fingertips will touch a point on the yardstick one inch shorter than the arrows should be. To be sure, check with the archery retailer. They usually have a pre-measured arrow or device which measures your exact **draw length**.

Other parts of the arrow are the **nock**, which snaps onto the string and holds the arrow in position. The **fletching**, or feathers, of the arrow help it to fly straight. Fletching can be made of feathers or plastic vanes. Fletching may be set straight on the shaft or twisted slightly (helical) around the shaft. Helical vanes spin the arrow like a rifle bullet, making it more



stable in flight while carrying a wide, heavy broadhead. The straight fletched arrow is slightly faster but not as stable with a big broadhead. Most fletching uses either three or four vanes. Flu-flus are arrows which have large fletching. This fletching acts to slow down the arrow in flight giving it a much shorter trajectory. It can be used to shoot upward at moving targets, but only under safe circumstances and with a safe background.

Many different kinds of arrow points are available, each with a different purpose and advantage. **Field or target points** are used mainly for target practice. **Blunt points** might be used for plinking. **Judo points** or Snaro heads (wire loops) can be used for certain small game or game birds respectively. Be sure to check the regulations to see which animals are legal game. Only **broadheads** may be used for big game hunting. Broadheads used for hunting must be solidly built and always razor-sharp. Many states require a certain width of broadhead and so many cutting edges to legally hunt big game. Broadheads kill by cutting blood vessels—unlike the high-energy shock of bullets. Hemorrhage is typically the result. A responsible bowhunter will only take shots which allow a clear, close path to the vital area of the game animal.

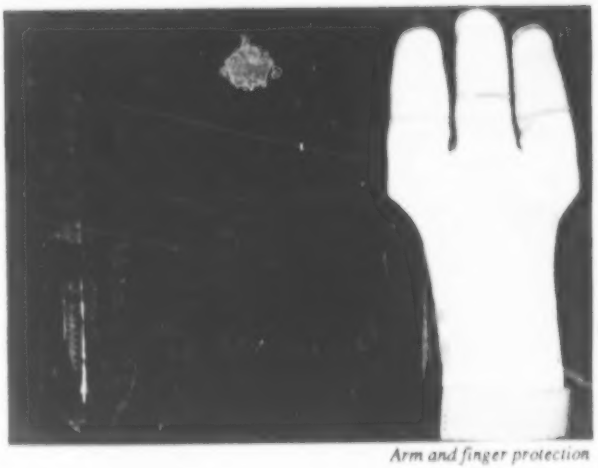
Before practice or hunting, an archer must examine each arrow to make certain there are no cracks or breaks in the shaft and the nocks are in good condition. Cracked or broken nocks can be replaced, but shafts that have cracks or breaks should be discarded. Under no circumstances should a cracked arrow be used. The shaft may shatter on release and be driven into the shooter's wrist or arm. Some common types of damage to look for are cracks and splinters in wood arrows; creases, dents, or cracks in aluminum arrows; and crushed sidewalls on fiberglass or graphite arrows.

ACCESSORIES

To protect the three drawing fingers that pull the bowstring, most archers wear leather **finger tabs**, three-fingered gloves or use **mechanical releases**. The mechanical release snaps on the string and is pulled back with the shooting hand. A trigger is pushed or pulled to release the string. An **armguard** is used to protect the inner part of the bow arm during release, as the string slaps back towards the limbs. The armguard keeps the bowstring from hitting loose clothing. It might also protect the arm in case an arrow breaks during release.

Arrows are usually carried in a **quiver**, which can be fastened to the bow, or strapped on the hunter's back or waist. The bowhunter must be protected from razor-sharp broadheads by a hood or cover on the quiver. A good quiver covers the entire broadhead and holds an arrow securely and quietly until needed. Quivers that don't cover the arrow points should not be used, because they expose cutting edges of broadheads to the bowhunter.

Recently, bowsights have become popular, especially with beginning archers. Sights are fastened to the bow and usually have sight pins or crosshairs that are held on the target as the arrow is released. Sights can be adjusted for shooting at different distances. Once set, sights will allow the archer to hit more consistently at known ranges. The important point about using sights is to practice estimating distances accurately. Also, the back sight which is either the eye of the shooter or rear



Arm and finger protection

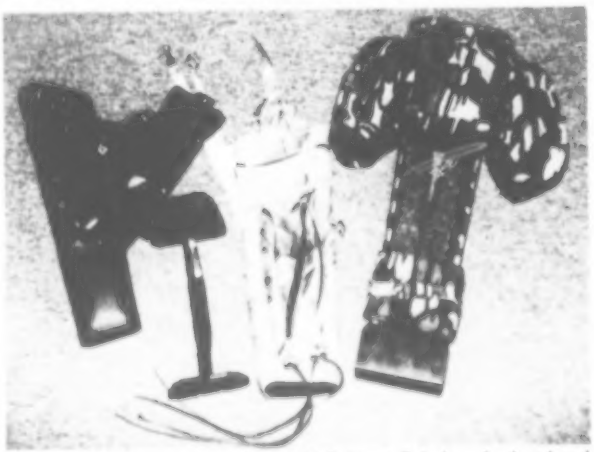
string or peep sight, must be the same for each shot. Archers who don't use sights learn to aim by instinct.

Care of Equipment

Bowhunting gear does not require regular cleaning, but certain care is very important. The limbs of all types of bows should be inspected for cracks or deep scratches, which may cause the bow to break. Unstring longbows and recurves after each use and store them in a cool, dry area to protect the layered or **laminated** wood and fiberglass. It's not necessary to unstring compounds, because little force is applied to the limbs when not drawn.

The wheels of compound bows should be kept clean and free of foreign material. The cables should be checked before each use to make certain they're not frayed or loose. All bolts or pins on a compound should also be inspected for looseness and wear.

Wooden arrows should not be kept in a quiver for long periods of time, but should be placed in an upright position to prevent warping. Bowstrings should be treated periodically with good bowstring wax to prevent fraying.



(from left) Quivers · Belt, bow, back and pack

SHOOTING A BOW

Shooting Position

The archer should stand at a right angle, or in a slightly open stance, to the target, with the feet about shoulder-width apart. This stance should be comfortable and allow the shooter good balance.

Nocking an Arrow

To correctly nock an arrow, grasp it between the thumb and index finger of the right hand (for a right-handed shooter). The left hand should hold the bow parallel to the ground about waist high, with the string toward the body. The arrow shaft should then be laid on the bow's arrow shelf and the slot in the nock pulled onto the string and snapped into place. The arrow should be nocked so that the **cock feather** (usually a different color than the other feathers) points away from the bow's **riser**. When the bow is raised to shooting position, the cock feather will be to the left (for a right-handed shooter). The nocked position of the arrow on the string should be approximately one-quarter inch above the arrow rest on the bow handle. A small brass band called a **nock set** is usually crimped onto the bowstring at this point. The arrow fits onto the string against the bottom of the nock set to ensure a consistent nocking point.

A bow should never be "dry fired," or have the string released without an arrow nocked. Dry firing can cause a bow to fly apart violently, injuring anyone nearby and ruining the bow. Energy from the release is transferred back to the limbs instead of to the arrow launched into flight.

Drawing the Bow

Grip the bow handle firmly in the left hand (for a right-handed shooter), but don't squeeze. Then bring the left hand to about eye level. Your left arm may be slightly bent or straight out from your body.

As you raise the bow, pull the string back with the three drawing fingers. At the same time, extend your left arm. Bring the three drawing fingers back to touch the same spot on your face each time. This may be the corner of your mouth, your cheekbone or your chin. This spot on your face is called the **anchor point**. Each time the bow is drawn, your fingers should come to the same anchor point. With practice, each archer finds a particular anchor point that is the most comfortable and accurate.

Aiming the Bow

Two main methods are used for aiming bows—bowsights and **instinctive aiming**.

With bowsights, the archer either knows or estimates the distance to the target and lines up the appropriate sight pin on the target. In some hunting situations, where it's hard to know the exact yardage to the target, bowsights may not work well. From a **tree stand** or a **blind**, where the distance to the target can be known, bowsights work very well. The key to using bowsights is to practice judging distances.

Instinctive bow shooters simply look at the intended target with both eyes open and release. The archer adjusts the aim for different distances by instinct developed with much practice. Focus both eyes on a small spot on the target. This aiming method takes more practice and concentration than using bowsights, but it takes much of the guess work out of shooting under some hunting conditions.

Holding and Releasing

When the bow is at full draw, the archer must take a short time to hold and aim. This holding time varies from archer to archer and according to the hunting situation.

The fingers should slip quickly away from the string on release. This gives the arrow a stable, straight flight. The bow arm should remain pointed directly at the target after the release. If the bow is jerked on release, it will cause the arrow to fly off target. The drawing hand should remain at the anchor point well after the string is released. This is called **follow through** just as with all shooting sports.

Practice

Find a suitable place to practice, far away from buildings and people. Never think the arrow can't travel beyond the target. Use a backstop and, if possible, have an open field for at least 300 yards beyond the target. Stacked straw bales, compressed cardboard, cellulose or a commercially made target can be used without damaging the arrows.

Begin practicing at a close range (10 or 15 yards) until you can easily hit an object the size of a grapefruit at this distance. When you become confident at this range, move a little farther away from the target and continue to practice until a range of 30 yards becomes comfortable. Responsible bowhunter's never shoot at game outside their range of confidence.

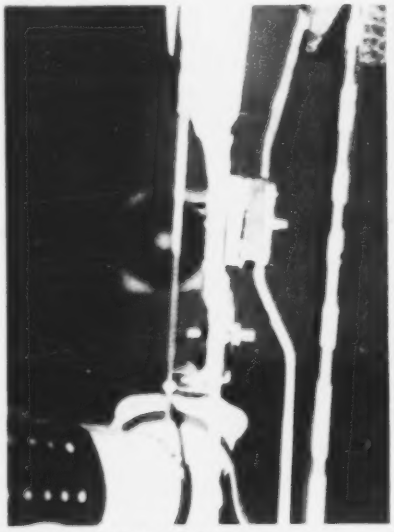
Use the same size arrows and same weight points for practice that you will use for hunting. Walking through the woods and shooting at safe targets makes excellent hunting practice. It also helps the archer gain confidence at judging distances after a series of targets are estimated and measured.

Practicing archers should shoot from various positions, such as kneeling, standing, sitting, leaning around trees and from a raised stand. This helps the archer prepare for hunting situations.

1. Shooting Position

2. Nocking and Drawing

3. Anchor Point, Holding



4. Aiming with Bow Sights

5. Releasing and Follow Through

6. Shooting a Group

BOWHUNTING AND ARCHERY SAFETY

An arrow is as deadly as a bullet, so archery equipment must be handled with the same rules of shooting safety that apply to guns. Although shooting accidents are rare among bowhunters, they do happen. Archers must obey a few common safety rules, whether on the range or in the field.

1. Never release an arrow without knowing its full path to the target and beyond is clear.
2. Never nock an arrow or draw a bow if someone is in front of you.
3. Never shoot an arrow even in the general direction of another person. Arrows are easily deflected. A small twig, unseen by the shooter, can cause an arrow to veer dangerously off course.
4. Always look beyond the target. Never take shots without something to stop the arrow in case of a miss. Never shoot over the horizon.
5. Never shoot straight up. A falling arrow carries enough force to penetrate the human skull.
6. Never carry arrows in the nocked position, except when slowly approaching game.
7. Always select a quiver that completely covers your broadheads. Stumbling with a quiver full of uncovered broadheads can cause serious injury.

Stringing a Bow

Never use the push-pull or step-through bowstringing method. You can hurt yourself and damage your bow. Instead, the safe and easy way is to use a **bowstringer**.

A bowstringer is simply a strong cord with a loop or pocket at each end that fits over the limb tip of recurve and some long bows. By standing on the loose middle of the cord after it is attached to the tips, the limbs can be flexed, as the handle is pulled. This allows the bowstring to be safely slipped into place.

To replace compound bow strings you must use a cable release or have double tears at the end of each cable end. Double tears allow you to change strings by stepping on the string being replaced first, then the new string second.

Broadhead Safety

Most archers' injuries come from broadheads. Broadheads must be kept razor sharp for hunting, which creates a safety problem if they are handled carelessly. The following rules help in handling broadheads safely.

1. Always use a proper wrench to screw on broadheads. This device covers the blades while a broadhead is being tightened on an arrow. If a wrench isn't used, the slightest slip can cause a serious cut.
2. When sharpening broadheads, always stroke the blade away from hands and body.
3. Always keep broadheads covered while traveling to and from the field. Many arrow injuries occur while loading or unloading equipment in vehicles.
4. While dressing bow-killed game, remember the broadhead may remain in the animal. Use great caution until the broadhead and all parts have been found.

Bowstringer

Wrong way to string a bow

TREE STAND SAFETY

The white-tailed deer is the animal most hunted with bow and arrow in Texas. The most popular and productive method of hunting whitetails typically uses some form of a tree stand. Some basic tree stand safety rules follows:

1. Always use a **haul line** to raise and lower your equipment. This can be a line with the free end simply tucked into your belt. The line is used to haul equipment up after you're securely in your stand. Never try to climb with a bow in your hand.
2. Always wear a **safety belt or line** to secure you to the tree while in your stand. This may prevent a dangerous fall. It allows a greater field of vision and wider shooting area because you can lean out against the line. Falls from stands have resulted in broken bones as well as several deaths.
3. Always choose a tree that's big enough to support you and your equipment easily. Use sturdy portable stands. Permanent stands weaken and quickly become dangerous.
4. Make sure your climbing system is safe and doesn't damage the tree.

Tree stand safety belt

EXERCISES / REVIEWS

"MUZZLELOADING JUMBLE"

DIRECTIONS: Find the words in the jumbled puzzle which match the definitions below the puzzle. All words have been highlighted throughout the muzzleloading chapter of Section 6. Words may be vertical, horizontal or diagonal and forwards or backwards throughout the puzzle. GOOD LUCK!

S	E	R	P	E	N	T	I	N	E	A	D	O	D	E	X	P
K	C	O	L	N	O	I	S	S	U	C	R	E	P	I	N	O
E	F	F	O	W	L	I	N	G	P	I	E	C	E	S	E	S
E	R	O	F	K	C	O	L	T	N	I	L	F	O	T	L	S
L	I	N	A	P	G	N	I	M	I	R	P	G	A	B	O	I
M	Z	T	H	A	N	G	F	I	R	E	P	N	H	F	H	B
R	Z	K	C	O	L	H	C	T	A	M	I	I	A	N	T	L
E	E	R	A	H	C	L	Z	Z	U	M	N	L	L	I	N	E
D	N	O	D	E	E	L	O	C	L	A	K	U	F	U	E	S
A	F	H	E	U	Q	P	L	U	P	H	E	O	C	K	V	B
O	G	R	G	O	U	C	F	K	C	Y	P	F	O	C	E	A
L	B	I	R	M	I	Y	M	X	O	A	R	E	C	O	A	G
E	E	J	A	S	R	B	U	E	E	M	E	O	K	L	P	W
L	L	K	H	U	E	G	R	A	H	C	S	I	D	L	Y	E
Z	M	D	C	H	A	I	N	F	I	R	I	N	G	E	R	R
Z	I	R	E	D	W	O	P	K	C	A	L	B	I	E	X	P
U	E	G	R	A	N	U	L	A	T	I	O	N	S	H	C	S
M	E	T	S	Y	S	N	O	I	T	I	N	G	I	W	K	M

(Fill in the blank next to its definition once you have circled the word in the jumbled puzzle.)

_____—made of sulphur, charcoal and saltpeter (potassium nitrate)

_____—earliest known muzzleloader ignition system

_____—filled with FFFFg powder in flintlocks

_____—snake-like piece between trigger and wick on a matchlock

_____—rear end of the barrel

_____—hole which passes from breech to priming pan

_____—matchlock, wheel lock, flintlock and percussion cap

_____—commonly used pyrite to produce sparks

_____—what explodes the primer on a percussion cap

_____—metal shield above the priming pan on a flintlock

_____—another name for muzzleloading shotguns

_____—substance which causes explosion in percussion caps

_____—ignition system using caps to ignite the powder

_____—what a cap is placed over on a percussion lock

_____—rifles, shotguns and handguns using black powder

_____—dangerous situation which can occur in muzzleloading revolvers if each chamber is not greased

_____—substitute for black powder

_____—measured sizes of black powder come in this form

_____—what muzzleloader accessories are carried in (mountain man-style)

_____—another name for a muzzleloader firing

_____—safety position for a hammer

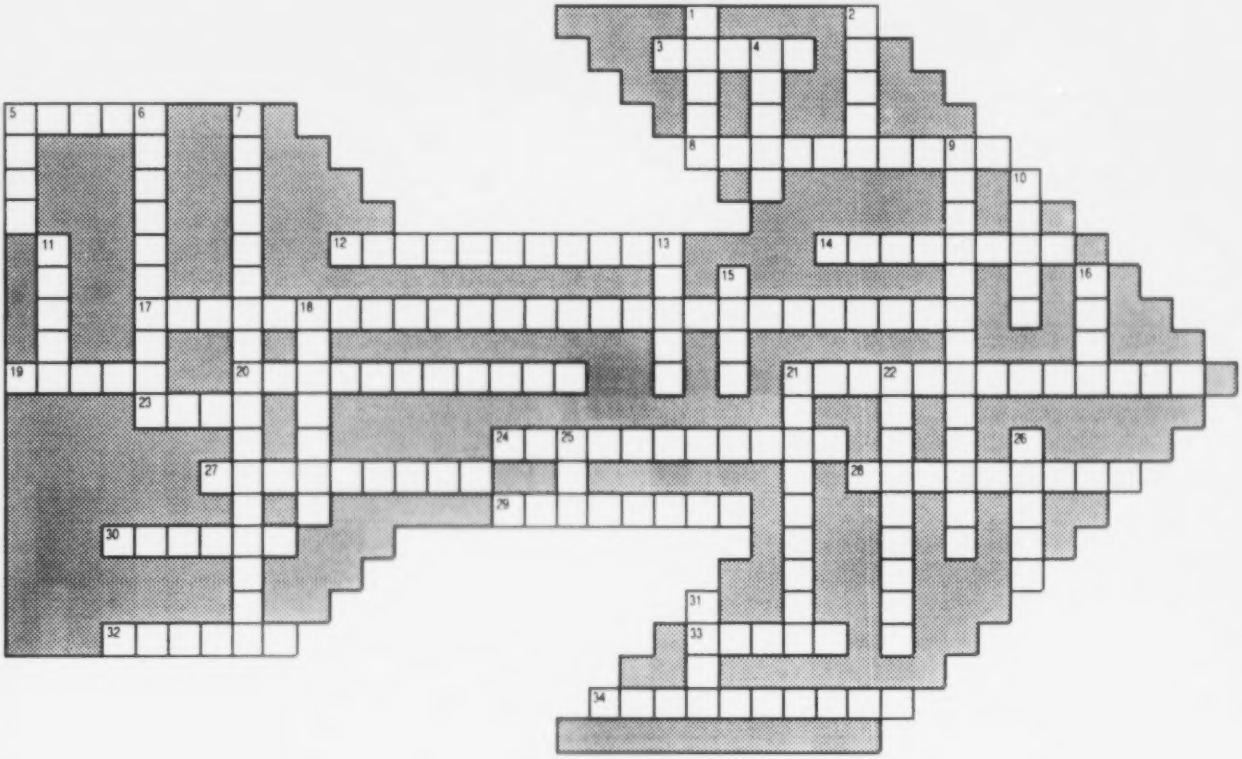
_____—another name for a loaded muzzleloader

_____—what happens when the charge or load does not ignite properly

_____—residue found in the barrel following a shot

"BOWHUNTING CROSSWORD"

DIRECTIONS: Complete the following crossword puzzle using the following definitions or clues. Words are written normally either across or down (not backwards or upwards). GOOD LUCK! (Hint: All words appear in bold type throughout bowhunting chapter.)



ACROSS

3. Bow arms
5. Conceals hunter on ground
8. Maximum pounds pulled on a bow
12. Safe way to string a recurve bow
14. Holding distance at draw length
17. Association of archers
19. Arrow point used for plinking
20. The point on the face where the archer holds the bowstring
21. Hold after arrow is released
23. Line used to raise or lower bows to tree stands
24. Off-colored feather or vane
27. Pass through an animal
28. Alternative to bow glove or trigger release
29. Bowhunter's arm protection
30. Arrow point protector
32. Bowhunter's practice goal
33. Maximum distance an arrow can fly
34. Safety feature used by bowhunters in tree stands

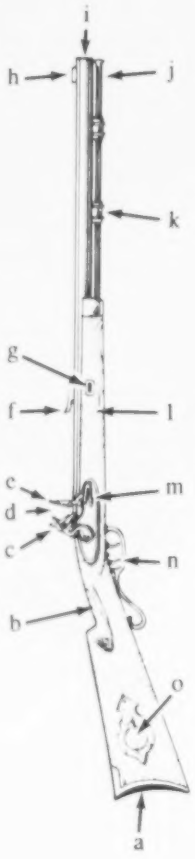
DOWN

1. Arrow point used for plinking in field
2. Stiffness of arrow
4. Arrow point used for hunting big game
5. Arrow used in a crossbow
6. Distance at full draw
7. Trigger used by a bowhunter
9. Pounds pulled at full draw
10. Point made of wire loops
11. Area on animal in which a hunter aims
13. Mid-section of bow; bowhandle
15. End of arrows which connects to bowstring
16. Blunt-tip arrow point with four small wires used for hunting small game or plinking
18. Small brass band set on bowstring at shooting point
21. Made of either plastic vanes or feathers
22. Glued-together pieces of wood and/or synthetics used in bows
25. Compound bow wheel
26. Bowhunting ammunition
31. Type of hunting stand

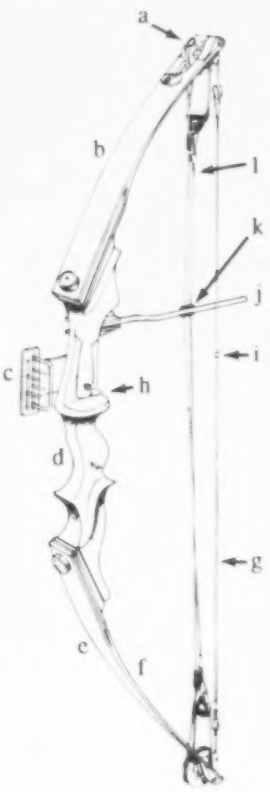
CHALLENGE — Since muzzleloading and bowhunting are alternative methods for hunters to use, safety and responsibility do not change. There are simply more considerations to make if you choose these methods. Your challenge is to first learn the basics offered in Sections one through five of this manual before trying to tackle these methods. If you are not ethically prepared to shoot a modern firearm, you might "accidently" have success in bagging an animal. If you are not prepared in muzzleloading or bowhunting, you will likely miss or wound your target. If you choose to hunt these ways, take additional training courses whenever offered by your local sportsmen's club or archery and gun ranges.

Fill in the appropriate blanks:

1. Parts of a muzzleloader:
   a. _____
   b. _____
   c. _____
   d. _____
   e. _____
   f. _____
   g. _____
   h. _____
   i. _____
   j. _____
   k. _____
   l. _____
   m. _____
   n. _____
   o. _____



2. Parts of a bow:
   a. _____
   b. _____
   c. _____
   d. _____
   e. _____
   f. _____
   g. _____
   h. _____
   i. _____
   j. _____
   k. _____
   l. _____



3. Parts of an arrow:
   a. _____
   b. _____
   c. _____
   d. _____
   e. _____

7 SURVIVAL AND WILDERNESS FIRST AID
...The Total Sportsman

OBJECTIVES

- To encourage you to explore and understand the psychology of survival and emergency situations, especially when hunting.
- To give you a basic understanding of how to avoid, prepare for or handle a survival or first aid situation in the outdoors.
- To give you sample checklists from which to prepare yourself, your backpack and your vehicle, especially for desert or cold weather survival and first aid situations.

INTRODUCTION

In this section, you will learn that the most important ingredient for survival or a first aid situation is your brain. Use it!

Ego, emotions, knowledge and actions, especially in unknown territory, direct your every movement. When exploring the outdoors, you will face certain fears, surprises and environmental conditions which will challenge your intelligence. The key for survival: remain calm, think rationally and most importantly, admit that you are in the situation.

Survival is usually a personal and individual situation. Emergency situations can be sudden, such as giving emergency first aid treatment or gradual such as getting hypothermia. Both situations will require you or your companions to first realize that there is a problem and then either rationally find a solution or at least do the best that you can under the circumstances.

Fear, anxiety, panic, lack of comfort, lack of knowledge and poor judgment are the biggest barriers to survival or first aid situations. The biggest mistake, however, is made long before the situation arises—lack of preparation.

By being prepared when you travel outdoors, you can avoid many unnecessary situations.

PREPARATION AND FITNESS

First prepare yourself, your companions, your vehicle and equipment to avoid unnecessary survival and first aid situations. Preparation provides the confidence that you can feel relieved knowing that you won't be caught off guard.

Education is your first step of preparation—which you are doing at this very moment. Read about the outdoors, study it, experience it with family and friends, and learn everything you can about being prepared.

The second step is to make sure you (and your companions) are fit for the trip. Physical exercise is especially important for hunters who will be outdoors and enduring some of the most rugged weather conditions and rough terrain (landscape). A hunter might hike ten miles over steep terrain. He or she may have to tote a hefty backpack containing a deer or its quarters. Physical exercise is important for the health of all humans, especially hunters.

Start your preparations early. If hunter education is required, be sure to take the course well in advance of the trip. Begin to educate yourself by reviewing laws, maps and anything you can find about your hunting area. Make sure to jog or do some sort of continuous exercise several months prior to the hunt. If you plan to carry any loads (all hunters must take and wear some type of pack and plan to lift a heavy animal or its parts), either wear a heavy backpack or carry weights when you jog. Make sure not to over-exert yourself. Gradually increase over time the amount of weights you carry as you exercise.

Personal protection is very important. Make sure to obtain the proper clothing for the hunting trip. In cold weather, the proper clothing performs three functions: 1) insulation, 2) thickness or absorption, and 3) wind-breaking capability. Remember, comfort is extremely important. Rashes, sores and/or blisters can be avoided if your clothing fits properly. In desert situations, make sure to wear light clothing and a hat which protects as much of your skin as possible to protect you from heat exhaustion or sunburns (exposure to the sun's ultraviolet rays). Sun blocks or lotions are also necessary protection in the desert; at high altitude; or in cold, windy or snowy environments.

Planning a hunt

103 BEST COPY AVAILABLE

Dressing in layers

Clothing should be easy to put on and take off, lightweight and worn in layers. Wool is the best all-around choice for insulation because it can provide warmth even when wet. Many new lightweight synthetic materials serve as a real advantage for outdoorsmen. Some help to wick moisture away, others while extremely thin, can provide thermal, moisture prevention and windbreaking capabilities. Talk to your sporting goods retailer who sells outdoor clothing and get the best advice for the situation you are planning. The main thing is to dress in layers so you can shed clothing if necessary. But you have to bring the proper clothing in order to shed it.

Footwear is extremely important for warmth and comfort. It is best to wear at least two pair of socks. A lightweight pair should be worn inside and a heavier pair outside. Wool is best for warmth and absorption, but it won't hold its shape, so any combination of nylon, rayon or spandex might be preferred. Boots can be made of waterproofed leather, insulated leather, rubber or synthetic insulative material. They should be the right size and "broken-in" long before extended use in the outdoors. Insulating liners and feet cushions might be valuable accessories.

Hats or head cover and gloves can be made from fabric, wool, knits leather, fill types, artificial leather, leather and/or various combinations. These are life saving items because **much of a person's body heat is lost through the head and hands.**

To summarize, personal protection is designed to provide a "shelter for the body." Layered clothing should include:

A vapor transmission layer — next to body; underwear; should release moisture from the skin and establish a base for your insulation package by retaining warmth.

An insulation layer — middle layer; weightier or bulkier; should hold air around your body in a still, warm cloud.

A protective layer — outer shell; various weights; should shelter you from water and wind and protect inner layers.

HYPOTHERMIA

Hypothermia, sometimes called exposure, is the lowering of body temperature. **Hypothermia is the number one outdoor killer.**

A person can lose or retain body heat through any one or a combination of five physical processes:

Radiation—Body giving off heat.
Convection—Outside air moving over the body, taking away the warm air from radiation.
Evaporation—Body perspiration, moisture.
Respiration—Breathing, inhaling cold air, exhaling warm air.
Conduction—Contact with cold surfaces, taking heat away from body.

In hypothermia, the body loses heat faster than it can produce it. Unprepared persons get hypothermia because of cold, wetness, wind and exhaustion.

Have you ever been so cold that you start to shiver? Uncontrolled shivering is usually the first recognized **symptom** of hypothermia. If you observe this happening to yourself or to your companions, take immediate steps or actions to prevent hypothermia.

PREVENTION OF HYPOTHERMIA

- First, get warm. Warm liquids and quick energy foods are recommended to produce inner body heat.
- Second, get dry. Build a fire and replace wet clothes with dry clothes.
- Finally, get out of the wind; find shelter.

All of these steps must be taken in order to prevent hypothermia. Be sure to also produce body friction, keep body parts moving and stay awake.

A) Prevention
   1) gain knowledge and understanding
   2) wear proper clothing
   3) be prepared

B) Action
   1) get out of the cold
   2) get out of the wind
   3) get out of the rain

C) Detection
   1) watch for uncontrolled shivering
   2) watch for slow, slurred speech
   3) watch for memory loss
   4) watch for lack of body movement
   5) watch for sleepiness
   6) watch for exhaustion

D) Treatment
   1) warm victim with fluids, body heat, dry clothing, blankets or put him/her next to a fire
   2) dry victim, and shed him/her of wet clothes
   3) Keep victim awake, limbs moving or rubbed with warm hands and/or body friction

WIND CHILL INDEX

Estimated Wind Speed in MPH	Thermometer Reading (°F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Feels Like Temperature (°F)											
Calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-21	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-36	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-124
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-49	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148
Danger from freezing of exposed flesh (with proper clothing)	Little Danger			Increasing Danger						Great Danger		

HYPOTHERMIA CHART

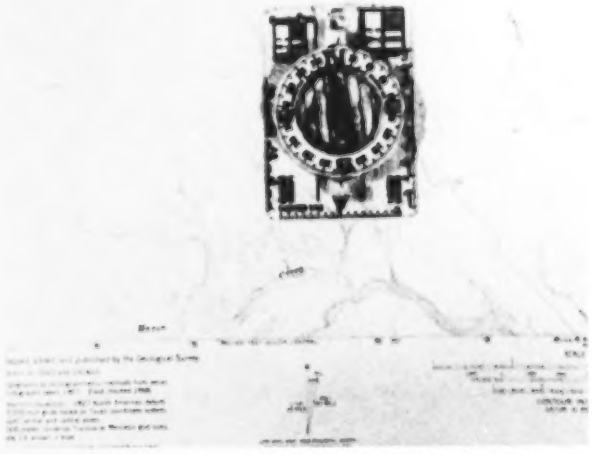
if the water temp. is...	exhaustion or unconsciousness occurs in...	expected time of survival is...
32.5°F	less than 15 minutes	less than 15-45 minutes
32.5-40.0°F	15-30 minutes	1-3 hours
40-50°F	30-60 minutes	1-6 hours
60-70°F	2-7 hours	2-40 hours
70-80°F	3-12 hours	3-indefinitely
more than 80°F		

USING MAPS AND COMPASSES

Always have an area **topographic map** when camping, hiking, hunting or fishing in remote, unfamiliar areas. Topographic maps show the contour (the hills and valleys) of the land. A person who has learned to use these maps correctly can study them and predict what an area will look like.

You can avoid trouble, as you hike into new territory, if you study a topographic map, and take **compass** readings often. If you have to cross a stream, take time to locate it on the map, study the surrounding land, and pinpoint the spot where you crossed. Pay particular attention when you cross a ridge; you may be entering an unfamiliar stream drainage. When you reach a high point at the top of such a ridge, study your map carefully. Use your high position to locate landmarks, which may only be visible from there. Plot on your map the spot at which you have crossed the ridge, and plan your return route.

One way to safely develop your skills using a map and compass is to practice with someone who is experienced with them. Another way to develop your skills is to practice in familiar areas. Both methods will help to keep you from getting lost in unfamiliar terrain.



Topographic Map and Compass

BASIC MAP AND COMPASS PROCEDURES

1. Purchase quality compass and topographic maps of your hunting location. Compasses are not expensive, especially compared to survival insurance. Topographic maps can be obtained for virtually every area in Texas and other states. Start by purchasing an index for the state(s) in which you want to hunt. Maps should be ordered by name, series and state. The name of the **quadrangle** is given in the index and is usually a prominent landmark in the area. The series designation gives size or scale. The most preferred (topographic) size is **1:24,000** or **7.5-minute** series.

   Maps west of the Mississippi River can be ordered from: Branch of Distribution, U.S. Geological Survey, Box 25286 Federal Center, Denver, CO 80225, 303/236-7477.

   Maps can also be ordered through local distribution outlets in major Texas cities.

2. Learn to use compass and read maps. Learning to take **bearings** or finding certain directions using a compass is an easy procedure and can be found in the instructions when you purchase the compass. Bearings can help you reach certain landmarks, retrace your steps or locate a downed animal. Be sure to determine your standard pace by walking a 100 ft. tape several times with a normal stride. Count the number of steps it takes you each time to walk the line. Add up the total number of steps it took you to walk the line three times. Find the average by dividing the total by three and divide this number into 100 to determine your pace.

   100 ft. Example: 45
   46
   43
   134 divided by 3 equals 44

   44 into 100 equals a pace of 2.5 ft.

   Reading maps and contour lines is simple. Most maps have a key of the symbols from which you can determine certain features.

   black — man-made
   blue — water
   red — roads, urban areas, U.S. land lines
   green — woodland areas
   brown — contour lines and values (elevations)

   If you are experienced in map reading you can determine direction and terrain; follow rivers, valleys and ridges; or locate where you are in relationship to your camp, buildings or even areas where game animals prefer.

3. Learn to use compass with maps. Knowing how to read maps and to use compasses can save your life. The problem with using the two together is one works primarily off of **true north** (map) and the other off of **magnetic north** (compass). Since the iron needle in a compass is affected by the earth's magnetic field, it works off of magnetic north which is towards Hudson's Bay near Canada. It is important to know the difference and account for **declination** so you can determine how to get from one area on the map to another. Or, you can determine where you are by **resectioning**, taking two or more bearings on objects in the field to determine your location.

   The only real way to learn how to read a map and/or compass is to follow the recipes or instructions and activities designed in map and compass or **orienteering** exercises. Summer camps, school outdoor education programs and sometimes your hunter education instructors might schedule such exercises.

IF YOU BECOME LOST

You are never lost, but you may not know where you are for a while. This describes the state of mind, a calm confidence, you should have if you become stranded or disoriented in the outdoors. If you are well prepared, the situation is just an inconvenience—a test of your skills and preparedness. **The key to survival is being prepared and staying calm.** With proper clothing, extra food and the ability to build fires, a lost person's greatest problem is to overcome the initial panic. Understand the situation for what it is—a major inconvenience.

Make plans before it gets dark. Think through recent events to see if you can retrace your path. If you decide you cannot return to your camp or car, commit yourself to spending the night where you are. Start preparing your camp at once. Select the best campsite near you. Look for a natural shelter, such as a rock overhang or thick growths of evergreens. If no natural shelter is available, pick an area with materials nearby to build a lean-to, or survival shelter. Your campsite choice should be in an area near water and plenty of firewood when possible.

SHELTER

A lean-to can be made by leaning branches against a horizontal support to form a frame for a roof. This frame can then be covered with evergreen branches to block out wind or **precipitation**. Side walls can be built in the same fashion.

Your shelter should be built or chosen so the wind does not blow into it. Place your fire where its heat will radiate into the shelter. Your sleeping area should be between the shelter wall and the fire.

FIREMAKING

There are six important uses for fire under survival conditions: 1) warmth, 2) drying clothes, 3) light, 4) cooking, 5) signaling, and 6) keeping you calm.

Choose the site of your fire carefully. If your fire is built on snow, make a platform of green logs or rocks under it. If the ground is dry, scrape down to bare dirt to avoid starting a grass or forest fire.

Gather all wood and other needed materials before starting your fire. Pile fine twigs, grass or bark shavings loosely as a base for your fire. If the **kindling** is wet, remove bark from trees. Then, with your knife, shave dry wood from the inside of the bark. On top of this starter material lay slightly larger sticks until you get a pile about 10 inches high. Beside the fire site, pile fuel ranging from small twigs to your main fuel logs. Collect more fuel than you can possibly use. You are now ready to start the fire.

Light the kindling at the base in the middle if there is no breeze. If there is a breeze, light one end of the kindling so the flame will be blown toward the rest of the fuel. As the kindling lights and the flames spread to the larger twigs, slowly add more wood to the blaze. Add larger pieces as the fire grows. Build the biggest fire you safely can.

There are many ways to start a fire—flint and steel, applying a 9-volt battery to steel wool, directing the sun's rays with a lens, and others—but it's better to plan ahead and have modern matches or other tools ready when you need them. You may find it educational and fun, however, to practice starting a fire with primitive tools.

WATER

While visiting remote regions, you should plan to provide your own drinking water. Carry plenty with you. If exercise is avoided people can survive several days in a cool climate without water. In a hot desert, however, you should stay in the shade during the day and work or move only at night or during cool evening and morning hours. Remember, you need two to four quarts of water a day, even in cool weather. **Solar stills** can provide emergency drinking water.

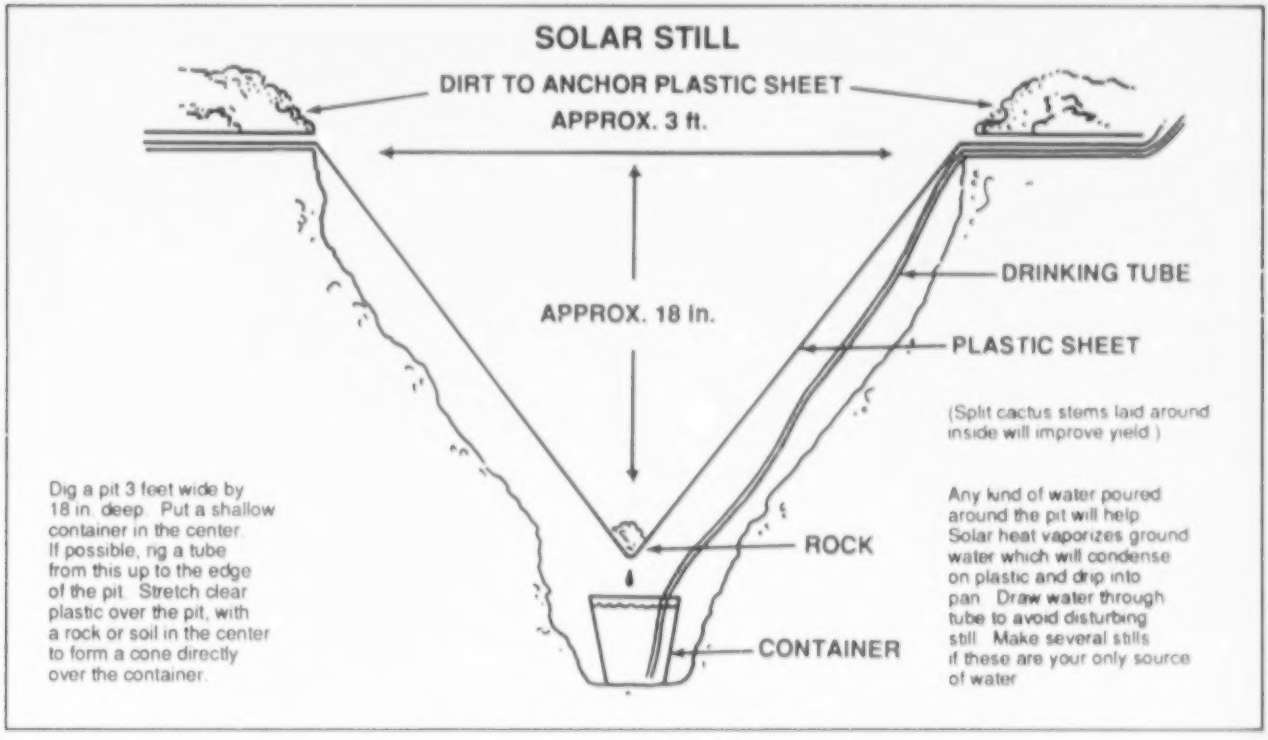
Pure drinking water is rare even in the most remote regions. The clearest mountain streams often are **contaminated** by **Giardia lamblia**, a parasite that causes serious intestinal sickness in humans. The primary way to purify water is by boiling. Chemical purifiers such as iodide or chlorine and filter systems can be used, but some may not be satisfactory. Never make survival problems worse by drinking unsafe water. Take the time to purify it properly.

FOOD

If you become lost, remain in one spot and it's very likely that you will be found in a few days. A human can go for two weeks or more without food, but only a few days without water. Although the need for food is not that urgent, you will be more efficient, alert and confident if you eat. There will certainly be

Building a shelter and fire

BEST COPY AVAILABLE


SOLAR STILL
DIRT TO ANCHOR PLASTIC SHEET
APPROX. 3 ft.
APPROX. 18 In.
DRINKING TUBE
PLASTIC SHEET
(Split cactus stems laid around inside will improve yield.)
Dig a pit 3 feet wide by 18 in. deep. Put a shallow container in the center. If possible, rig a tube from this up to the edge of the pit. Stretch clear plastic over the pit, with a rock or soil in the center to form a cone directly over the container.
ROCK
CONTAINER
Any kind of water poured around the pit will help. Solar heat vaporizes ground water which will condense on plastic and drip into pan. Draw water through tube to avoid disturbing still. Make several stills if these are your only source of water.

sources of food in the area, but you may have to change your way of thinking to recognize them. Generally, anything that birds and mammals eat will be safe and have some good value. However, to be sure, study what types of plants and other outdoor products are edible. Your hunting and fishing equipment may be the best means of getting food in a survival situation.

GETTING RESCUED

After you have made the decision to stay in one place and wait for rescuers to find you, use every means possible to help them find you. Since you will not be able to determine when help may come within sight or hearing, get ready to signal for help as soon as you find that you are lost.

The international emergency sign for distress is three of any signal: three (safe) shots, three blasts on your whistle or three fires, evenly spaced. But, in a hunting situation, three shots may not work. Make smoke by putting green wood in a hot fire. If you can find an open area nearby, stomp out an "X" in the snow, grass or sand. Make it as large as possible, so it can be seen easily from the air. Branches, logs or rocks in or along the "X" will make it more visible.

Do everything possible to attract attention to your position. A signal mirror, a bright piece of material, noise and smoke are good ways to do this.

SURVIVAL RULES

1. Tell someone where you're going and when you plan to return. If you move from one area to another, be sure someone knows that, too.
2. Don't go on an outing by yourself.
3. Take enough food and water for several days of emergency survival.
4. Take a map of the area and compass and know how to use them. Always orient yourself before leaving camp.
5. Wear proper, layered clothing. Remember, the weather can change quickly. Pack extra clothing in backpack and vehicle.
6. Plan your daily outings so you can return to camp before dark.
7. Never leave camp without taking fire-starting equipment.
8. Don't panic if you become lost.
9. Pack standard first aid kits in backpack and vehicle.

CHECKLISTS

PREPARING A DAYPACK

There are a few survival items that will meet most needs. These tools will fit in a small pouch or daypack which you can carry while hunting from a base camp. They should be carefully chosen to meet the needs that may arise in the region where you are hunting. A daypack carried on a desert hunt, for example, will differ from one for the mountains.

SAMPLE SURVIVAL KIT/DAYBACK

- space blanket
- 50 ft. nylon cord
- water
- wax match fire starters/ waterproof case
- bottle of **betadine**
- topographic map/compass
- non-match fire starters
- beef broth packet
- sugar cubes
- tape, pen and pad
- survival tool/knife
- snakebite kit, insect bite kit
- sunglasses
- suntan lotion, chapstick
- candle
- **cyalume** lightstick
- raincoat
- whistle
- flint striker and steel
- mirror
- cable saw, wire
- rescue blanket, sling
- large trashbag
- metal match
- survival mirror
- fishing kit
- large piece aluminum foil
- 8 ft. square clear plastic
- first aid kit

In the fall and winter months, your vehicle should be equipped for a cold weather survival situation. Such a kit should at least include extra warm clothing (insulated coveralls), blanket, water, flashlight, distress flag and shovel.

Survival Kit

SAMPLE VEHICLE KIT

1. Blankets or sleeping bags
2. Extra warm clothing
3. High-calorie, nonperishable food
4. Drinking water
5. Catalytic heater or "home-made" heating source
6. Matches, candles or solid fuel
7. Pocket knife and first aid kit
8. Empty three-pound coffee cans with lids—
9. Transistor radio
10. Flashlight or signal light
11. Battery jumper cables
12. Signal flares
13. Shovel
14. Two tow chains or ropes
15. Sand or cat litter
16. Basic repair tools
17. Ax or hatchet
18. Fire extinguisher
19. Quart of motor oil
20. C.B. radio
21. Gas line de-icer
22. Distress flag
23. Games for passing time

FIRST AID FOR OUTDOOR ACCIDENTS

First aid is the immediate care given to a person who has been injured or has suddenly become ill. When giving such care, remember four basic rules:

1. Rescue the **victim** from a life-threatening situation (remove victim from water, fire, poisonous fumes, etc.).
2. Ensure that the victim has an open airway and give rescue breathing if necessary.
3. Control severe bleeding.
4. Treat for shock.

(The following article by Mary-Love Bigony, was taken from Texas Parks and Wildlife magazine, **"Don't Just Stand There - Do Something!"**).

Medical emergencies aren't necessarily more likely to happen outdoors than around the home, but being miles away from the nearest hospital can add fear to a situation. The uninjured members of the party can do a great deal to reassure the victim by taking quick action, since action in itself has a calming effect.

The first aid steps presented here are intended for adults and children over the age of 10. If you take young children on a camping trip, you'll need to take extra precautions, especially in the area of prevention.

Outdoor accidents can range from mild to life threatening situations. The following steps are intended only as a guide, since many factors must be taken into consideration, including the distance to the nearest hospital. Know the limits of your capabilities, and do everything possible to avoid further injury. Consider taking a first aid course offered by the American Red Cross and many hospitals; it is an excellent investment in time.

BLEEDING

Severe bleeding is one of the most life threatening medical emergencies. Shock and loss of consciousness can result from the rapid loss of just two pints of blood. A victim can bleed to death in a very short time.

Direct pressure on the wound is the best way to stop bleeding. If a **sterile** gauze pad is close at hand, use it. Otherwise, use the cleanest piece of cloth you can put your hands on quickly. In an emergency such as this, infection is less of a concern than preventing massive blood loss. Use the palm of your hand to press the pad firmly over the wound. Don't lift the pad to check, since that will renew the bleeding. If the pad becomes saturated with blood, press a fresh one directly over it and continue pressing. If the wound is on a limb, and there is no evidence of a fracture, elevate the limb above the level of the heart to let gravity reduce the blood pressure in the injured area.

Direct pressure and elevation usually are enough to stop bleeding, but if these techniques fail you might try shutting off circulation in the artery that supplies blood to the injured limb. There are four pressure points to stop bleeding: the left and right **brachial artery** at the inside of the upper arm and the left and right **femoral artery** at the top of the inner thigh. Keeping your fingers straight, press the artery firmly against the underlying bone. Do not substitute this technique for direct pressure and elevation. Use it only long enough to stop the bleeding.

BLISTERS

A friction blister can develop in three minutes and cause pain for several days. The unbroken skin that covers a blister gives the best protection against infection, and the fluid will be reabsorbed naturally. Clean the skin, and apply a dry, sterile gauze bandage. If the blister breaks, apply an **antibiotic** and keep it covered.

To protect the area from continued friction, use an adhesive-backed felt cushion called **moleskin**. Cut a dough-nut from the moleskin with a hole the size of the blister. Position the doughnut around the blister and tape it in place.

BROKEN BONES

Signs of a broken bone following an accident include pain that lasts more than a few minutes, difficulty in moving the injured area and swelling. If the victim must be transported a considerable distance to receive medical care, it is a good idea to immobilize the joint above and below the break to prevent further injury and relieve pain. Don't try to straighten the limb; splint it in the position in which you found it.

For a broken leg, place a blanket or some other type of thick padding between the legs and bind the injured leg to the uninjured one with strips of cloth. Bind the legs together snugly at several places above and below the painful area. If you suspect a broken foot, remove the shoes and tie a pillow or thick padding around the foot.

For an injured arm or wrist, fold thick padding such as newspapers or clean clothing around the limb and tie the padding snugly. Support the arm with a sling, and bind the sling around the chest.

Remember to check the splint often, since swelling in the injured area can cause the bindings to become too tight. Tingling and numbness are signs that the bindings are too tight. A cold pack will help relieve swelling, and should be part of your first aid kit. Don't put ice directly on the skin, and don't leave it on continuously.

BURNS

Cold water—not ice water—is the best treatment for any burn. Immerse the burned area, or apply cloths that have been soaked in cold water. (These steps should not be used on large areas with third degree burns.) Don't use butter or any type of greasy ointment. It can interfere with healing and cause an allergic reaction.

Major burns require immediate medical attention. Cut clothing away from the burned area, but don't pull on charred clothing that is stuck to burned skin. Cover the burn with a sterile dressing. This will reduce the pain caused by air on the burn, and will discourage contamination. If the feet or hands are burned, put sterile gauze between the toes or fingers. Elevate burned arms and legs above the heart and place the victim in a sitting position to allow the person to breathe more easily.

CARBON MONOXIDE POISONING

This colorless, odorless gas kills without warning. Be careful around wood and charcoal fires and make sure your camp stoves and lanterns are in good working order. Symptoms of carbon monoxide poisoning include headache, dizziness, weakness and difficulty in breathing. If not moved away from the source of the fumes, the victim's skin can turn red and he or she can lose consciousness.

Get victims into fresh air immediately, and keep them lying quietly. Remember, carbon monoxide is deadly. Prompt medical care is essential.

CARDIAC ARREST

Cardiac arrest can result from a heart attack, major accident, drowning, hypothermia, heat stroke or being struck by lightning. **Cardiopulmonary resuscitation (CPR)** can and has saved many lives that otherwise would have been lost.

Mastery of CPR skills requires training and practice. Contact the American Heart Association or the American Red Cross about classes.

CHEST WOUNDS

A sucking wound of the chest, such as might happen in a hunting accident, is a deep, open wound of the chest wall through which air can flow. If the object that caused the wound is still in place, do not disturb. To do so can result in severe bleeding.

Cover an open chest wound with sterile gauze, a clean cloth, plastic or foil. This covering should form an air-tight seal. Hold it in place with tape or a bandage. If the victim has trouble breathing, remove the bandage and replace it quickly. You can use the palm of your hand to cover the wound until someone locates a bandage. All chest injuries are very serious and need immediate medical attention. Transport the victim to the hospital with the injured side down.

CHOKING

Choking while eating usually results from laughing or talking while chewing and not cutting food into small enough pieces. If the victim can speak, encourage him or her to cough forcefully. This should expel the obstruction.

If the victim cannot speak, and is clutching the neck, between thumb and index finger, he or she has a complete obstruction. Act quickly, since the brain soon will develop an oxygen shortage, which will lead to unconsciousness and death.

The **Heimlich maneuver** is the most effective first aid measure for choking. Stand behind the victim, make a fist with one hand and place the thumb side of your fist against the victim's abdomen (above the navel and below the rib cage). Grasp your fist with your other hand and press forcefully into the abdomen with a quick upward thrust. Repeat until the obstruction is dislodged.

COLD WEATHER HAZARDS

Hypothermia—a dangerous drop in body temperature—can happen even when temperatures are above freezing if the wind is blowing and clothing gets wet. Coastal waterfowl hunters should be especially careful in the winter. Wear several layers of lightweight clothing and remove damp clothing promptly, since wet clothes can be more dangerous than no clothes at all when the weather is windy and chilly. Wear a hat, since half the body's total heat production can be lost from an uncovered head.

Symptoms of hypothermia include shivering, slow reaction, stumbling, clumsiness, confusion, difficulty in speaking and loss of judgment. Hypothermia can undermine a person's rationality as well as strength. Victims might not take steps to help themselves. Watch for symptoms in your companions, and don't delay treatment.

Take the victim indoors as quickly as possible and remove wet or constricting clothing. Wrap him or her in warm blankets or place in a tub of water that is warm, but not hot. If the victim is conscious, give him or her warm nonalcoholic drinks. If you can't get indoors, improvise a shelter and get out of the wind. Change the victim into dry clothing. Wrap the victim in blankets or put him or her in a sleeping bag with another person (see survival topic in this section).

CUTS AND SCRATCHES

While minor cuts and scratches aren't life threatening, they shouldn't be ignored since they can lead to serious infection if left untreated. Be sure to keep your **tetanus vaccination** up to date. The usual recommendation is a booster every 5 to 10 years.

Clean the skin around the wound with soap and water, washing away from the wound to avoid contamination. Then wash the wound itself with soap. Flush it thoroughly with water, and pat it dry. If dirt or grit is imbedded in the cut, wash and rinse for at least 20 minutes. Then, use sterilized tweezers to pick out the grit or splinters. Remove only what you can pick out easily; don't probe into the wound.

If you wish to use an **antiseptic**, Consumers Union recommends 70 percent **isopropyl alcohol** (rubbing alcohol). Use a cotton swab to apply it to the skin around the wound; do not apply it directly to the wound.

Apply an antibiotic and cover the wound with sterile gauze or the cleanest cloth available to prevent further contamination. Change the bandage once a day, or whenever it becomes dirty or wet.

See a doctor if signs of infection appear. A reddened, hot, painful area around the wound, red streaks radiating from the wound and swelling accompanied by chills or fever are all signs of infections.

FISH HOOK REMOVAL

Find someone with steady hands and a strong stomach to do this one.

If the hook is imbedded past the barb, push it the rest of the way through the skin—forward and up—in a shallow curve until the point and barb come out through the skin. Clip off the barb and gently withdraw the hook. Wash the wound and apply an antibiotic. Again, make sure your tetanus vaccination is up to date.

HOT WEATHER HAZARDS

Water is the best safeguard against heat-related disorders. Drink plenty of it. Don't wait until you're thirsty. By that time, you're in the first stages of **dehydration**. In addition, wear lightweight, light-colored clothing and keep your head covered. Heat cramps, heat **exhaustion** and heat stroke usually are progressive, so pay attention to your body and take action as soon as you notice you're uncomfortable.

Heat cramps—These painful spasms of the leg muscles are a result of strenuous activity in hot weather. Move to a cooler place, drink water and massage the cramped muscle.

Heat exhaustion—Symptoms include pale and clammy skin, weakness, nausea, headache and muscle cramps. Treatment is the same as above. Fan the victim to remove heat by convection, but be careful not to overchill him or her.

Heat stroke—This is a serious medical emergency. Symptoms include dry, hot and flushed skin; dilated pupils; fast pulse becoming slow and weak; deep breathing that becomes shallow. Body temperature can exceed 106 degrees and the skin becomes dark or purple. Give the victim water. Wrap the victim in a sheet or something similar and soak it with cool—not cold—water. Fan, but do not overchill the victim. Above all, get him or her to a hospital immediately.

Emergency — Moving an injured person

MOVING AN INJURED PERSON

Moving the victim with a back or neck injury should be left to **paramedics** or other professionals, since permanent damage could result from improper handling.

If a victim must be pulled to safety, move him or her lengthwise and headfirst, supporting the head and neck. Keep the spine in alignment. Don't twist the back or turn the head. If possible, slip a blanket or long coat under the victim.

If the victim must be lifted, three or four people on alternate sides should support each part of the body and lift in a straight line. You can improvise a stretcher out of a blanket and poles, or use buttoned jackets with the sleeves turned inward and the poles run through the sleeves.

SHOCK

Watch for the symptoms of shock after any serious injury. These symptoms include pale, cold and clammy skin; rapid pulse; shallow breathing; and fear or apprehension in the victim.

Keep the victim lying down. Some shock victims improve if the feet are raised eight to 10 inches. If he or she is having trouble breathing, raise the victim's head and shoulders about 10 inches instead of raising the feet. Maintain normal body temperature and loosen any restrictive clothing. Try to keep the victim calm and comfortable, and get medical help as quickly as possible.

SNAKEBITE

All four of the venomous snake species found in the United States are found in Texas: the rattlesnake, copperhead, cottonmouth and coral snake. This increases the odds of snakebite for Texas sportsmen, of course, but it also points out the need for protective clothing and caution.

There is probably no topic in first aid that is more controversial than snakebite treatment. Most doctors agree that the most effective course of action is to get the victim to a hospital emergency room immediately. Cutting and suctioning the bite can cause serious injury and delay the trip to the hospital. If possible, keep the victim in a reclining position to slow the spread of venom. Keep the wound at or below the level of the heart.

Remember that reactions from snakebite are aggravated by fear and panic. Do everything you can to calm the victim. Under most circumstances, the most effective treatment is getting the victim to the hospital quickly. Snake guards are helpful because they give the sportsman more confidence when in snake territory.

SPLINTERS

Splinters, thorns and cactus spines can lead to infection if not removed. Sterilize a needle and tweezers by heating them in a flame and wiping them off with sterile gauze. Loosen the skin with the needle and remove the splinter with the tweezers.

SPRAINS AND STRAINS

A **sprain** happens when a joint is pushed beyond its normal range; a **strain** is an injury to a muscle that is overstretched or twisted. Wrists, knees and ankles are subject to sprains, while any muscle can be strained.

Both conditions are painful, and a sprain usually is accompanied by swelling and discoloration. For both injuries, remove shoes or tight clothing from the injured area, elevate the limb and try to avoid using it for 24 hours. Cold compresses applied intermittently can reduce swelling; after 24 to 48 hours, switch to hot, moist packs. Use aspirin to relieve pain.

A severe sprain should be wrapped in a supporting bandage. Don't wrap too tightly, just enough to provide support above and below the injury. See a doctor if swelling and pain last more than a few days.

Snake leggings

STINGS AND BITES

In the summer, it seems as though everything outdoors stings or bites. It's enough to make a person run for cover. A small number of people suffer severe, violent **allergic** reactions to insect stings. Anyone who knows he or she suffers such reactions should wear an allergy identification tag and carry a kit with **antihistamines** and a syringe filled with **epinephrine**. Such kits are prescribed by a physician, and the person who is highly sensitive to insect venom should never go outdoors without one.

Even people who are not highly allergic can become ill from multiple insect stings. If this happens, get the victim to a doctor. Otherwise, simple first aid steps should ease the discomfort.

Bees, wasps and fire ants—Hunters can avoid a painful welcome to the deer blind if they carefully remove wasp nests before the season opens. Meat tenderizer relieves the pain of insect stings if it is applied quickly. Otherwise, try ice or a paste made of baking soda. Honeybees are the only stinging insect that leave the whole stinging apparatus in the wound. Don't pull it out, since that will squeeze more venom into the skin. Instead, scrape it out with the blunt edge of a sterilized knife. Scratching insect bites can cause infection. You can relieve itching with cold or hot compresses or by applying a one-half percent **hydrocortisone** cream.

Marine life—Stings from the jellyfish, Portuguese man-of-war and stingray can produce burning pain and a rash. See a doctor if more serious symptoms occur. Wipe off the affected area with a towel and wash it with rubbing alcohol. Many people swear by meat tenderizer to relieve the pain, and a warm solution of vinegar and water is said to ease stingray stings.

Spiders—With the exception of the brown recluse and the black widow, spiders are generally harmless. The black widow has a shiny, fat, roundish abdomen with a red or orange hour glass marking on the underside. The brown recluse ranges in color from dark brown to tan, and has a fiddle-shaped mark from the eyes to the abdomen. While deaths from brown recluse and black widow bites are rare, both can produce painful effects and the victim should see a doctor. If you can't get to a doctor quickly, disinfect the wound with rubbing alcohol and apply a cold compress to the bite

Scorpion—A scorpion sting can be very painful. This is something you want to avoid if at all possible, so make it a habit to shake out footwear and bedding before use. The victim of a scorpion sting may experience nausea and vomiting, abdominal pain and shock. Medical care is necessary in the event of a severe reaction. A cold compress can alleviate some of the pain.

Ticks—Ticks can transmit several diseases, including Rocky Mountain spotted fever and Lyme's disease. There is evidence that the chance of catching a disease from an infected tick is greater if the tick remains attached for a long time, so it is important to check your skin often and remove any ticks you find. You usually can dislodge a tick with a few drops of turpentine or by covering it with heavy oil or petroleum jelly. If it hasn't come out in 30 minutes, remove it gently with tweezers. Make sure you don't crush the insect and that you get all parts of the head out. Scrub the area with soap and water for five minutes.

First aid kit contents. (You can tailor the contents to meet individual needs.)

- 2-inch-square sterile gauze pads
- 4-inch-square sterile gauze pads
- Assorted adhesive dressings
- Assorted butterfly bandages
- Roll of 1-inch adhesive tape
- Roll of 2-inch adhesive tape
- Moleskin
- 2-inch-wide gauze bandage roll
- Antibiotic salve
- Petroleum jelly
- Unseasoned meat tenderizer
- One-half percent hydrocortisone cream
- Syrup of ipecac
- Scissors
- Tweezers
- Cotton swabs
- 42-inch-square cloth for triangular bandage or sling
- Safety pins
- Needles
- Instant chemical cold packs
- Thermometer
- Aspirin
- Antacid
- Decongestant
- Hard-backed razor blades
- Sterile eyewash
- Eye dropper
- Coins for the pay phone

First Aid Kit

DEFINITIONS

SYMPTOM—Condition or sign of illness.

TOPOGRAPHIC MAP—Map which shows natural or selected man-made features to scale.

COMPASS—Instrument used to locate direction.

QUADRANGLE—A charted area of land.

TRUE NORTH—Charted north in latitude/longitude system (north polar axis)

MAGNETIC NORTH—Area about 1,200 miles from true north to which magnetized compass needles point.

DECLINATION—Difference (measured in degrees) between true and magnetic north from a given point.

RESECTIONING—Determining one's location on a map from compass readings taken to objects in the field.

ORIENTEERING—Skill using map and compass.

CONTAMINATED—Infected, impure.

GIARDIA LAMBLIA—Parasite from domestic and wild animal droppings which live in water and cause serious illness in humans.

VICTIM—Harmed or injured person.

STERILE—Clean, not causing infection.

BRACHIAL ARTERY—Main artery located in upper, inside arm region.

FEMORAL ARTERY—Main artery located in upper, inside thigh region.

ANTIBIOTIC—Destroys or reduces growth of bacteria (infection).

MOLESKIN—A soft fabric used over blisters.

CARDIOPULMONARY RESUSCITATION (CPR)—Involving heart and breathing; reviving or bringing back to life.

HEIMLICH MANEUVER—Method used to dislodge foreign object stuck in throat of choking victim.

TETANUS VACCINATION—Prevents infectious disease caused by wounds or punctures.

ANTISEPTIC—Medicine preventing infection.

ISOPROPYL ALCOHOL—Rubbing alcohol.

DEHYDRATION —To lose water or become dry.

PARAMEDICS—Trained medical rescue people.

SPRAIN—Joint pushed beyond normal range.

STRAIN —Injury to a muscle that is overstretched or twisted.

ALLERGIC —Sensitive to a certain substance such as food, insect poisons and pollen; makes person infectious or ill; can cause death.

ANTIHISTAMINES—Drug used to fight allergic reactions.

EPINEPHRINE—Hormone (drug) which stimulates the heart.

HYDROCORTISONE—Drug which treats infections from animal bites.

CHALLENGE—Your challenge in this section is to take a standard first aid and CPR course. These efforts may help save someone's life.

ASSIGNMENT—Prepare a hunter's daypack or backpack survival and first aid kit and a vehicle survival and first aid kit. Be sure to check them periodically to make sure all supplies and equipment are in good shape. Also, use them in survival or emergency situations. Don't leave them at home.

—Purchase a map of your hunting area or home location and compass and practice using each separately and together.

HELPFUL REFERENCES

Survival Manual. Colorado Div. of Wildlife, 6060 Broadway, Denver, CO 80216.

The W.I.S.E. Man's Guide to Wilderness Survival. Astonisher Press, 540 W. Joel, Lincoln, NE 68521.

Introduction to Topographic Maps. Dept. of Conservation, 2901 W. Truman Blvd., Box 180, Jefferson City, MO 65102.

Complete Outdoors Encyclopedia. Harper and Row, Keystone Industrial Park, Scranton, PA 18512.

Standard First-Aid Personal Safety. American Red Cross, 707 N. Main, Wichita, KS 67203.

Advanced First-Aid and Emergency Care. American Red Cross.

Emergency, The First-Aid Video Tape. Emergency Video, 1420 Delmar Dr., Folcroft, PA 19032.

1/4

8 BASIC HUNTING TECHNIQUES
...Putting Knowledge and Skill Into Practice

OBJECTIVES

- To give you basic information regarding specific hunting preparation, planning and techniques.
- To review basic steps of cleaning big game, small game and birds.
- To list other considerations as they apply to hunters preparing game for taxidermy, using boats while hunting and using all-terrain vehicles.

WILDLIFE CLASSIFICATION

Wildlife are classified by several categories in order to enforce laws protecting them. In the hunting guide you see them as game animals, fur-bearing animals, game birds, migratory game birds, endangered or threatened species and protected or unprotected birds. Additionally, exotics are included in this manual because of their importance to hunters.

Aldo Leopold classified game species into **farm game**, **forest and range game**, **wilderness game** and **migratory game**. However, we usually refer to them as big game, small game, migratory waterfowl, upland game, endangered and nongame species and furbearers.

Hunting species from each of these categories presents the hunter with different, challenging and rewarding experiences. For example, the goose hunter's experiences are quite different from those of the deer hunter. Each has its own traditions and satisfactions. A goose hunter will trudge through a rice field hauling heavy loads of gear then bury his or her head while looking skyward for more than four hours. Deer bowhunters will let their arms and legs go numb before moving when they know an animal is near.

It is this man-versus-animal type of instinct that compels hunters to go back time after time. Each time is one more experience, one more pounding of the heart. During moments afield, a hunter's mind may fill with thousands of thoughts. But once an animal approaches, the hunter's senses are focused only on one thing—the prey.

THE PREY

Animals are representative of those symbols ancient man considered wild. Characteristics, behavior and patterns allows each animal to fill a certain part of the ecosystem. The various animal species have survived over hundreds of years because they have been able to find and compete for their basic needs.

Buck Rub

Buck Scrape

115 BEST COPY AVAILABLE

One type of animal characteristic is visual clues which can prevent us from making mistaken-for-game hunting accidents. Examples are the black-cheek patch on male pronghorn antelopes; the "flags" of the white-tailed deer; the face pattern on a gray fox; and the green head on a mallard drake.

A second type of characteristic is the kind that we can hear. Examples include the wild call of the sandhill crane; the familiar honk of the goose; the gobble of a strutting "tom," the grunt of the deer; and the howl of the coyote.

A third type of characteristic involves the animal's particular movements; like the mule deer bounce; the fast or slow wingbeats of some waterfowl; the zig-zag in-flight pattern of the common snipe when flushed.

A fourth type of characteristic for hunters to think about is animal groups. In some species, harems are common during certain seasons and large groups or singles during other seasons. Flock patterns provide the clue with which waterfowlers can determine the kind of ducks in a flock even when they are several hundred yards away. The familiar "V" shape of certain migratory birds are common.

Other characteristics which provide clues to hunters are signs animals leave, camouflage capability and behavior. Why is that small tree scarred? Why are animals camouflaged? Why do some birds change colors? How does a buck know when to rut? How large is a male mountain lion's territory? There are literally hundreds of thousands of questions you can ask while hunting. The key to finding the answer is by watching, reading, or listening. Wildlife biologists or game wardens also can be called on when you can't find the answers.

HUNTING TECHNIQUES

General hunting techniques involve planning, preparation, experience, techniques, responsibility and follow-up.

PLANNING

Planning for a specific hunt or for hunting a certain game species should take up more of your time than the actual hunt. First, educate yourself and read everything you can get your hands on. If you have never seen the animal or been in its habitat, look at pictures.

The head of the family must be sure the lease arrangements are secured or public hunt permits submitted. If allowed, the family can visit the lease during the off season to prepare blinds, feeders, cabin facilities and even get in a little shooting practice on an approved, allowed and safe site. You can understand why hunting is a family affair, a year-round experience and a sport which you can enjoy a lifetime.

PREPARATION

Make sure you have sighted in your bows or rifles; patterned your shotguns and practiced, practiced, practiced. Visits to the trap, skeet or sporting clays range are fun and provide the much needed practice before the first dove hunt.

Be sure to obtain the most current Texas hunting regulations or the regulations of your out-of-state destinations. For instance, if you have horses or dogs, did you know that many states require a veterinarian's certificate or a current vaccination record?

Proper equipment preparation will make your hunt a successful experience. Is your clothing adequate? Remember, you can always shed clothes; but you can't put on warmer clothes if you didn't think to bring them (See Section 7).

Do you pack extra bow strings, firearms or rifle scopes when you hunt? When your hunt is ruined because of something as simple as equipment failure, you may get angry and do things you might normally not do. Remember, your emotions can control your safe habits. Being calm might be your best skill as a hunter.

EXPERIENCE

We have already reviewed why proper skills are so important to being a safe and responsible hunter. Experience, however, is the best teacher when it comes to learning about game animals and how to hunt them.

Hopefully, your start in hunting began under the guidance of the parent or relative who helped you gain many experiences in the outdoors. Probably your first hunts were ones in which you either had no firearms or you had unloaded ones. While demonstrating safe skills your eyes were always watching for game. Perhaps your parent or teacher showed you scrapes, tracks, rubs and other signs and explained what they were or how they were made.

Hunters remember experiences more when they have had to do such things as clean their first animal in the field. It is an experience you cannot appreciate by just reading about it or observing how it is done. You must get in and do it. Hopefully, in your reflections and memories of the hunt you will show last respects for the game in such an experience. Many Europeans have customs that symbolize respect for game they kill because they realize it is one animal's life given up to feed another. As a hunting goal, you should try to reach this level of respect.

TECHNIQUES

Hunting techniques are skills; some of them easy and some of them not so easy. The easy techniques are ones that spell success even if you do not take game. Awareness, observation and just getting outdoors are enough techniques for some. Other techniques are difficult to master and some cannot be mastered.

General hunting techniques, no matter what game you are hunting, involve the safe and responsible hunting practices you have reviewed throughout this manual. Then, learn more about the particular legal method you choose which includes rifles, shotguns, handguns, bows and muzzleloaders. Finally, learn the specific techniques unique to each of the game species you hunt. These techniques involve not only knowing the animal but also the proper technique which will get you within the distance for an effective shot.

General hunting techniques include the way you hunt. The way you hunt will depend mainly on the method you choose or animal you hunt, but there are some basic techniques common to all hunting.

Still Hunting

Still hunting is walking quietly through an animal's habitat, stopping frequently and if necessary for long periods. When using this technique, it is important to plan the hunt properly so you know where your companions are located at all times. One of the main reasons daylight fluorescent orange is worn is so that you will know where other hunters are located.

A good rule of thumb is to spend at least ten times more time stopping and watching than you do walking while still hunting. Use binoculars in open or semi-open terrain so that you can properly identify movements. Get close to the ground and watch rather than stand. The human silhouette, if seen, will spook many game species.

This method is used typically by big-game rifle hunters on public lands when either they are unfamiliar with where the animals are moving or the hunter can't build or bring in stands.

Stalking

Stalking is slightly different from still hunting because the hunter follows certain signs leading to a particular animal or group of animals.

You may have the animals in sight and need to sneak closer for a more effective shot. You may smell or hear the animals such as with elk, sheep or collared peccaries. You may follow tracks on trails or a morning "dew" trail through the leaves and brush.

Stalking helps you develop keen senses because you must learn to keep downwind, stay quiet (at least human-type noises), keep alert and be extremely patient at times.

Posting

Posting is a term used in some areas to describe sitting or standing in one spot. The location may provide the hunter with a vantage point or a spot near the animal's used trails.

Posting is a technique which gives you a lot of quiet thinking time. Avoid falling into the trap of seeing or imagining game which is really not there. The slightest movement by something you think is there could have your mind saying, "take the shot—hurry!" If the movement is another human being you might be pointing the muzzle in an unsafe direction based on a daydream.

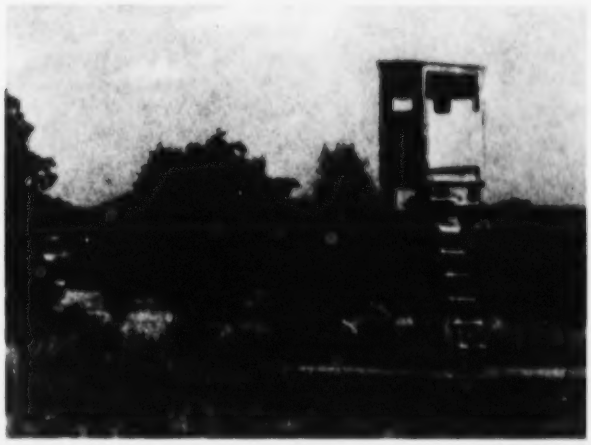
Posting is a good technique, however, when you know where the animals are travelling each day and you are not allowed to use a blind or stand.

When setting up a posting site, be sure you break up your pattern and can easily swing your firearm or draw your bow. Once the animal approaches, you may not be given the chance to move, so prepare your shot beforehand.

Ground Blinds

Ground blinds are make-shift or temporary blinds located on the ground which conceal the hunter. They are made of everything from plywood, to tires, to branches; anything which hides the hunter's movements.

If ground blinds are used, be sure to situate them downwind (normal wind pattern during a given time of day such as morning). Also, situate them so the sun least affects your judgment or vision. Most importantly, put the blind in a spot which gives the safest background, view or clearing. For example, do not situate in a spot where most of your shots are towards a ridge top.



Tower Stand

Stands

Stand hunting is popular with deer hunters in Texas. When the leaves fall, one drive through the "Hill Country" will give a person an idea about the type of tower stands used.

Tree stands are temporary or permanent stands placed next to or in trees. Stands, especially permanent stands, must be approved by the landowner before they are built or placed.

Ground Stand or Blind

1/7 BEST COPY AVAILABLE

Safe way to haul a rifle up a tripod stand

In some states, it is illegal to drive nails into live trees. The recommended practice is not to damage live trees when building stands.

Be sure to always wear a safety harness or strap when in a tree stand. Never climb a tree with a firearm or bow. Use a hauling line to lift sporting arms to your place in a tree or raised stand.

Raised stands are high enough for you to make careful movements. Avoid letting your emotions cause you to rush or lean too far for a shot. Many accidents occur each year because hunters fall from trees or tower stands.

Tripods or temporary stands need the same precautions. Examine temporary stands each time you use them to be sure there are no loose screws, arms or seats. Make sure there are guide wires or nylon ropes which securely hold these stands to a tree or ground.

Stands should be placed in locations similar to those for ground blinds. Stands also can be placed on clearings, cut paths or anywhere which gives hunters a clear, unobstructed view. Never place stands on fence lines or near another landowner's property since you may not know where other lease hunters will be. Also, if an animal is on the other side of the fence, it tempts you to be illegal and unethical.

"Vehicle stands" or vehicles used as stands should be open, not enclosed. They should be parked, occupied by only one or two hunters and should be placed as if they were a tripod or temporary stand on a road within the boundaries of private property.

Game Calling

Calling is an effective technique for most animals because all animals make sounds. Sounds used in the right way can attract animals based on their behavior.

There are sounds made by an animal in its territory such as deer rattling, an elk "bugle" or a turkey "gobble." There are feeding sounds which an animal uses to join the feast such as a duck's feeding "chuckle." There are sounds which imitate an animal in distress inviting coyotes, bobcats or foxes to feed. There are hundreds of sounds which can attract all types of wildlife.

A skillful hunter uses these sounds to attract animals close enough to him or her for an effective shot or photograph.

Baiting

Baiting is illegal for migratory game animals and, in some states, illegal altogether. When it is legal, such as in Texas for deer, feral hogs and certain birds, it can be an effective tool for hunting or attracting wildlife.

Be sure to use fresh bait and feed which provides quality nutrients. For deer, the preferred feed used especially in troughs is a protein-enriched pellet. Realize that you may not be providing wildlife with the best nutrients if you feed only corn. Deer usually eat natural forage rich in nutrients such as acorns, forbs, buds and browse.

Remember, it involves a personal choice of ethics if deciding to hunt at a feeder station.

Predator game calling imitating an animal in distress

Dogs

Hunting with dogs is a popular method to use for finding and retrieving game animals. A dog can also give the hunter many years of companionship and rewards. A good hunting dog is a product of many hours of training, reinforcement, health care and encouragement.

Good hunting dogs not only usually have good breeding lines but also responsible masters. Taking care of their dogs is the main responsibility of hunters using this technique.

There are several breeds of dogs which can be used for hunting different game species. Some dogs can be used to hunt several types of game animals.

Pointers are used primarily for upland game birds. Some examples are the English pointer, the setters and the Brittany (a pointing spaniel).

Retrievers are larger, more robust dogs used mainly to retrieve waterfowl. They can also be used to hunt other game birds. Examples of retrievers include the Labrador, golden and Chesapeake Bay retrievers.

Other sporting breeds include spaniels which are used mainly as flushers of game.

Hunting hounds are another breed of dogs. More popular in the Southeast for raccoons or rabbits or in the West for mountain lions and bear, a pack of hounds provides much enjoyment to the hunter who appreciates the sounds they make in chase. Hounds are used legally to hunt deer in some states.

English and American foxhounds are popular with the traditional fox hunts made famous by European royalty.

Trapping

Note: Trapping requires either a trapper's license, or special permit as it applies to a certain method for taking wildlife. Trapping is a hunting method used primarily for fur-bearing animals, or it can be used also in wildlife management for animals damaging crops and for animals which are diseased, dangerous or a nuisance to people. Some animals are live-trapped because "man has moved into their neighborhood" and wants them removed, but not killed. Such species include skunks, armadillos, deer and geese. Others include urban wildlife such as squirrels or blue jays. Still, others are attracted to urban trash such as bears or raccoons.

Trapping was used by mountain men and Indians. It is one of the most primitive hunting methods used by ancient people. The value of furs for garments has existed throughout history because it kept early man dry and warm. Oils from furbearers were used by ancient people as a way to waterproof objects. Some oils were thought to have medicinal values.

Before the introduction of firearms, trapping was one of the most effective techniques used to kill animals. It is still an effective technique to use for legally capturing wildlife which are not seen often during the day.

A trapper is like a bowhunter or muzzleloader. He or she pursues wildlife using primitive means. But a trapper is also a person who harvests game species that are not captured in a lot of other ways. Fur-bearing animals are harvested primarily for the value of their fur. Many fur-bearing animals are quite edible and provide trappers with food as well. Some fur-

Brittany Retrieving Quail

bearers such as raccoons or unprotected species such as feral hogs must be cooked well before they are eaten. They can carry **parasites** or diseases which are killed only by extreme heat.

Live Traps—Live traps are box, cage or corral-type traps which allow an animal to enter, but not to escape. Most live traps use baits such as sour corn mash for feral hogs or worms for armadillos. Once an animal is captured in a live trap, the hunter may choose to relocate the animal or kill it and use its fur and/or meat.

Body-gripping Traps—Connibears, body gripping traps, are used on land or in water for fur-bearers who travel familiar or constructed routes. They can also be used in front of entrances to pre-set animal baits. They are primarily used for beavers, nutria, muskrats and raccoons.

Foothold Traps—Foothold traps include longsprings, coilsprings, and underspring or jump traps. They are designed with jaws which close and hold fur-bearing animals until the trapper reaches them. The jaws are smooth to prevent injury to trapped animals. If a stray dog or cat gets caught, the trapper has the option of letting them go by releasing either the jaws or springs. Typical prey for these types of trap include coyotes, foxes and skunks.

Trapping, like hunting, takes a tremendous amount of knowledge, skill, responsibility and experience. If you choose to trap in Texas; secure the proper licenses and permits, work closely with the landowner, train under an accomplished trapper, and follow rules of responsibilities similar to those of hunting.

Guidelines of the trapper's code:

1. Obey all laws,
2. Respect public and private property,
3. Honor the rights of others,
4. Check traps regularly and faithfully,
5. Use proper (size) traps and selective sets,
6. Consider the trapped animal's plight,
7. Handle pelts properly,
8. Dispose of carcasses properly,
9. Help others who need a trapper's skill, and
10. Support and defend proper conservation practices.

VITAL SHOTS/TRAILING

Vital shots are those which penetrate, cut and/or tear the vital organs of the game animal. The primary vital organs are the heart, lungs, liver or arteries that carry blood from the heart to other tissues. The spinal column or brain may also give you a quick, clean kill.

The largest of these targets is the heart/lung/liver region behind and to the rear of the lower and upper shoulder region. This should be the only area at which a bowhunter shoots. Realize that as a deer moves, it presents either a larger or smaller opportunity for the shooter to hit that vital area. Quartering away with the front leg forward is perhaps the best opportunity to make an effective kill for either the firearm or bowhunter.

Shots straight away (at the rear) or coming towards a shooter should not be taken unless you are hunting with a rifle and take either a spinal or heart shot. However, these are smaller targets and the hunter should be confident about the shot and his or her skills in placing that shot.

Shots which should be avoided are ones from halfway back on the animal to the rear. Both rifle and archery shots in the gut or abdomen will usually allow an animal to run a long distance. Signs and blood flow are limited to fewer drops or pieces of chewed and/or digested material.

Trailing a hit animal is a skill which bowhunters are accustomed to because they must learn it to retrieve most all of the game they shoot. However, even rifle hunters must learn how to trail animals.

After you shoot a game animal, observe its every movement. Even if it looks like you may have missed the shot, always check every clue in and around where the animal was standing. Never assume you missed without taking a hard look at the ground, trail and any other signs or even noises you hear afterwards.

The first thing a rifle hunter should do is unload the round in the chamber and put the safety back on. If in a stand, follow stand safety rules by unloading and lowering the gun safely to the ground with a hauling line. Be sure not to rush because it might lead to unsafe movements.

A bowhunter should stay put for at least a half hour to an hour before trailing a deer. For gut-shot animals that usually hump their back when shot, wait much longer before trailing. During that time, you should retrace the shot and sequence in your mind making the start of trailing much easier.

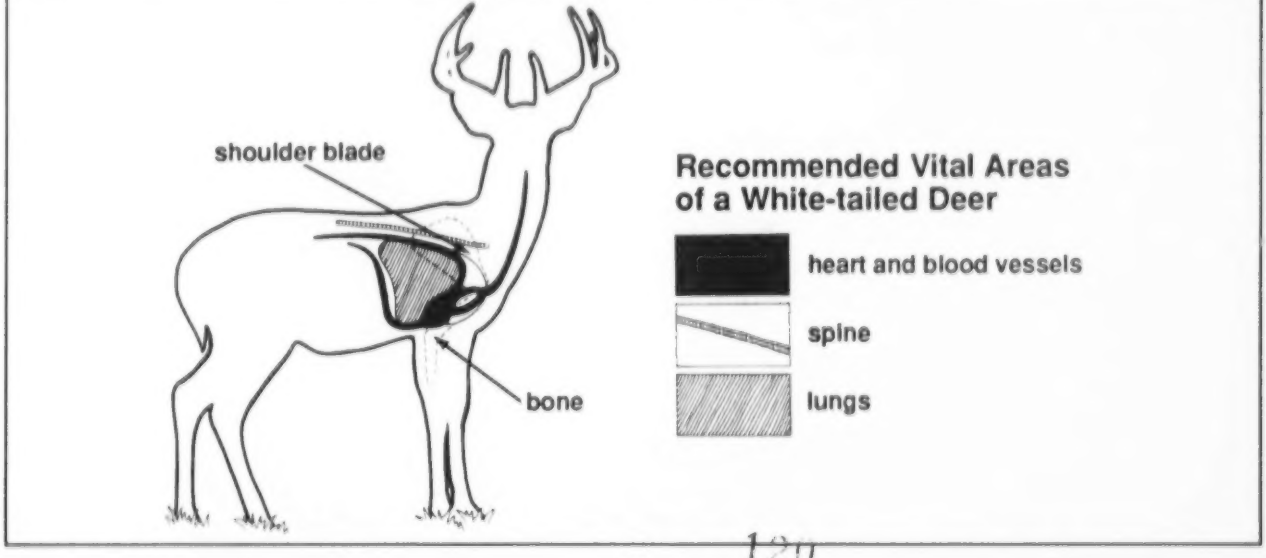
Once at the site of the shot, look for clues. Blood is the main sign to look for, and it will tell you where you might have hit the animal. Dark, rich colored blood reflects livers and kidneys. Bright "frothy" blood indicates a lung hit. Blood mixed with chewed up or digested matter means a gut or abdomen shot. If blood is not present but you did hit the animal, it may be bleeding internally.

Signs you should look for when trailing an animal include:

- blood-spattered or in drops and at different heights from the ground
- broken twigs, branches, scattered leaves
- tracks - usually running, long strides and "dug in"
- hair, meat or bone fragments
- "dew" line early in morning
- downhill trails, especially toward water

Be slow, quiet, careful and patient when trailing a deer. If you have trouble seeing blood, get your hunting companion(s) to help you. Mark the trail at significant spots with surveyor's tape. (Be sure to retrace the trail collecting all marks after you have found your animal.)

If you lose a trail, try several search patterns to see if you can pick up the trail again. You can either try a circular or grid pattern. A circular pattern resembles a bullseye around the last clue. A grid is a systematic walk back and forth to either side



of the last clue. You also may look the area over trying to visualize the scene as an animal would while seeking water or thick cover.

Part of the many responsibilities you have as a hunter is practice. Take shots at the game and then make every possible effort to trail it. No hunter likes to wound game, but when it does happen, you must stop your hunt and search for the animal. Some hunters have trailed game successfully up to 12 hours.

GAME CARE

FIELD CARE OF BIG GAME

After you have shot your deer, approach it from the rear carefully, making sure it is dead. Tag the deer immediately and in a secure manner. Start field dressing the deer at once with a good, strong-bladed knife. There is no need to cut the throat to bleed the deer because it will do so in the process of field dressing.

The following procedure has been used for many years by hunters in field dressing a deer:

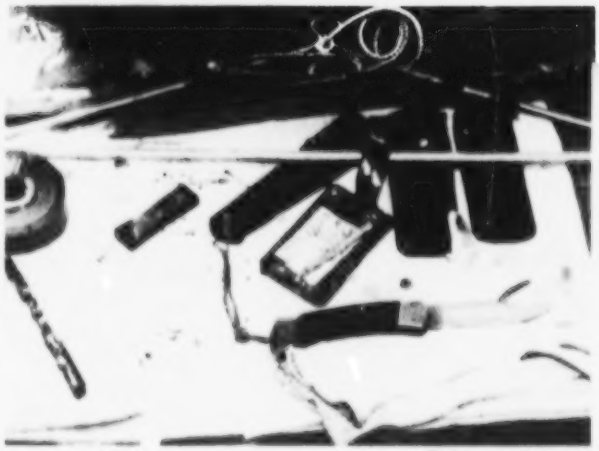
(1) Prop the deer on its back using two large rocks or logs under the shoulders and two under the hips. If your deer is a buck, remove the sex organs with a sharp knife. Note: In many states such as Colorado, sex organs must remain naturally attached as evidence of sex.

(2) Starting between the hind legs, cut all the way down to the pelvic bone. At this point, you also can cut a hole around the anus. Then turn your knife blade up, and using your other hand to hold the skin and meat away from the entrails, cut up the middle of the deer through the breastbone and on up the neck as far as possible. Note: If you plan to have your deer mounted by a taxidermist, cut only as far as the breastbone. Be sure you use a strong, large-handled knife to cut through or to the side of the breastbone (brisket), because a small knife will hit the rib cage and turn sideways in your hand.

(3) Cut the windpipe (and esophagus) in two as far up the neck as possible. Lay your knife down. Grasp the windpipe with both hands and pull down hard. The insides will come out all the way down to the midsection. If entrails do not pull easily, cut the connective tissue holding them next to the backbone.

(4) Now remove the stones from under the deer and roll the carcass on the side. Cut the thin layer of meat that is holding the entrails to the ribs, all the way down to the backbone. Then turn the deer over and do the same on the other side. This tissue is known as the diaphragm. Lay your knife down again, and, using both hands, get a firm grip on the entrails and pull down, hard. All the entrails should come out of the deer.

(5) Lift the deer up by the hind legs and lay a large rock under the rump. This will spread the back legs open. Place



Field care of game kit

your knife against the middle of the pelvis to locate the seam where the bones grow together, and press down, hard. Then you can finish cleaning out the deer. For safety reasons, a small saw is preferred. You still may have to cut some connective tissue in or around the anus.

(6) If a tree is handy and you have a rope, hang the deer up by the head or antlers for about 20 minutes. This will allow any remaining blood to drain out of the body cavity. If no tree is handy, turn the deer back side up in a clean place and let it drain.

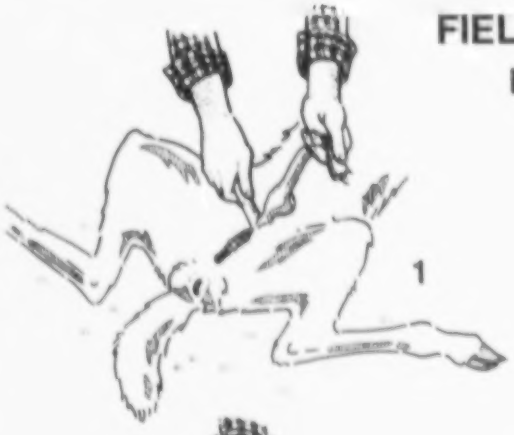
(7) You can begin skinning while the deer is draining. (If the animal's head is to be mounted, hang the deer by its hind legs for skinning.) The skin comes off most easily while the deer is still warm, so it should be skinned within two hours. To remove the skin, cut it down the inside of each leg to the middle of the deer. Now cut the skin all the way around the neck, as close to the head as possible. Grasp the skin with both hands at the back of the head and pull down hard. Usually the skin will come off down to the front legs. Use your knife to work the skin off the legs and where the skin sticks tightly to the meat. Then pull down on the skin and it will come free.

(8) It may be simpler to take your tagged deer back to camp to complete this process. Once skinned, hang it in a tree by the hind legs for four to five hours. This will allow all the tiny blood vessels to drain. Wrap the deer in a sheet or cheesecloth or you may legally quarter your game if you wish. The main thing is to keep the insects off while keeping it cool. Better yet, take it to a commercial meat cooler or pack the quarters in an ice chest. An average white-tailed deer can be properly **aged** up to 3 to 4 days at 40 degrees Fahrenheit. Note: Be sure you take with you proper "evidence of sex" if required of that game species, and never process the deer beyond quartering until you reach your final destination with the meat.

The three main factors which can spoil meat in field care of game are dirt, heat and moisture. Other factors include insects and musk glands found in deer and collared peccaries.

FIELD DRESSING

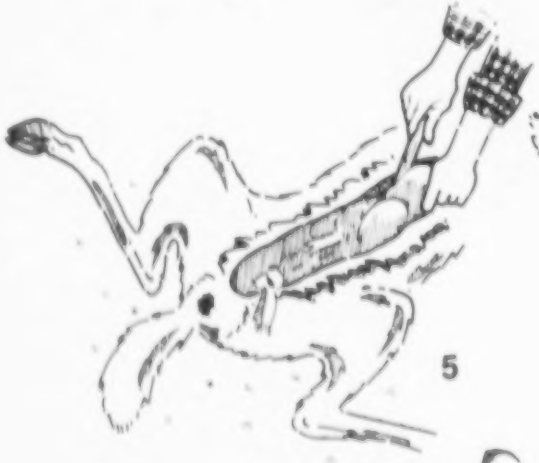
BIG GAME


1

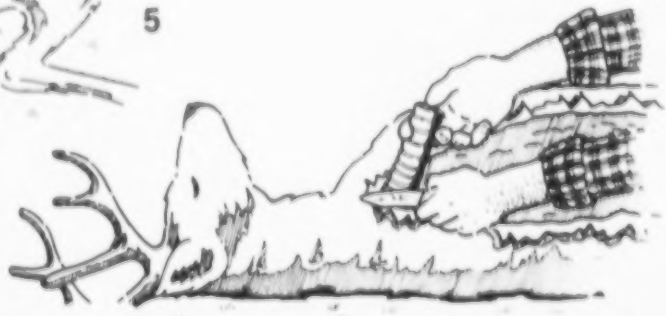
2

3

4


5

6


7

A game care kit might include the following items:

—license tag and pen
—blaze orange flagging
—strong, sturdy shorter blade knife (2)
—plastic or cotton gloves
—hatchet or small saw
—gambrel and pulley system (camp)
—sturdy nylon rope (25-ft. min.)
—whetstone; sharpening stones and sticks, oil
—cooler and ice
—plastic bags for heart and liver
—plastic bags for boned out neck and rib cage
—game bags or cheesecloth
—hand towels, foil or the like
—large bag for cape or trophy head and for buck or doe's head for transport
—salt (non-iodized) for hide care

LARGER GAME

Larger game animals, including exotic species, large feral hogs, elk and big game in other states, follow many of the same field cleaning techniques as smaller deer. However, because it is more difficult to move larger animals, you may have to skin half (lengthwise) of the animal. Then, turn the animal back onto the skinned hide and skin the other side. Use the inside of the hide as a table to cut the large quarters off of the animals. This keeps dirt off the meat. Put each quarter in a game sack and attach them to a backpack frame for the hike out.

SMALL GAME

Smaller game animals such as collared peccaries (javelina) can be cleaned much the same way as big game animals. The key is to allow the meat to cool quickly and age properly for tasty eating. Removing the entrails allows the inside cavity to cool quickly.

For animals such as squirrels and rabbits you can skin the animals before making the cut on the underside to take out the entrails.

A squirrel's hide is tough. Make your first cut under the tail. Cut it away from the body, but leave it attached to the skin. Place the squirrel on its back on the ground and place one foot on the tail. Get a good grip on the hind legs and pull upward, peeling the skin towards the head. Switch ends and pull the hide from the hips and the hind legs.

A rabbit's skin is not quite as tough and can be removed after making a cut in the hide across the back. Pull toward the head with one hand and the tail with the other with each fold of skin. Then, pull off the remaining parts of the hide. It should come easy, but you will have to cut off the head and legs at their joints.

WATERFOWL AND GAME BIRDS

Waterfowl and game birds can be plucked or skinned. Plucking leaves the skin on the animal and makes a tastier meal by sealing in natural juices. Skinning allows you to clean a bird much quicker but is more difficult to keep the meat moist while cooking.

Plucking the bird can be done manually by pulling feathers in the opposite direction from which they lay. Be sure to pluck birds over a trash sack so the feathers can be properly disposed. An easier method of plucking involves a mechanical or machine plucker available at some meat lockers or wild game processing facilities.

To remove **down** or **pin** feathers, you can choose to scorch the down and pluck the pin feathers. You can also dip the bird in a solution of paraffin (wax) and hot (185 degrees) water. Once the wax cools, you can peel off down, regular and "pin" feathers.

Once the animal is plucked or skinned, you can make a cut across the soft lining tissue in the abdomen. Reach with your hand inside all the way to the neck and pull the innards backwards. Clean out the lungs next to the back rib cage and area around the anus.

In the field you can make this cut before plucking. Then, take a coat hanger bent in a small handle with a hook on one end. Insert it toward the neck and twist. Then pull backwards towards the opening. This should pull most of the entrails out of the body cavity for a quick cooling action while you continue to hunt. Note: Some game birds and waterfowl species require evidence of sex or species such as wings, spurs or fully feathered bird. Be sure not to skin a bird fully in the field without checking the state's hunting regulations.

BUTCHERING AND COOKING GAME

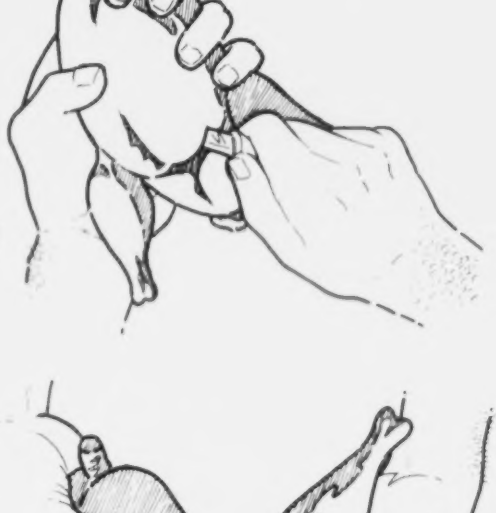
Butchering and cooking game may involve taking your legal game, quarters or scraps to a processing or sausage-making facility. Although a lot simpler for the hunter, it might be somewhat expensive and take away the joy of making your own cuts of meat, packages, sausages or jerky.

To many deer hunters, there is a certain reward about going hunting, taking and caring for game until it is on the table as a savory piece of cooked venison. It allows the hunter to be a total sportsman, making everything they do a quality experience. Memories of the hunt are relived throughout the entire process.

The basics to butchering game is to make cuts suitable for one family meal per wrapping. These can be divided into one

FIELD DRESSING

GAME BIRDS



1

2

3

roast, two to five steaks or even a package of chunks for shish-kabob. Scraps can be saved and mixed with regular pork fat and seasoning for sausage or ground up with beef fat as hamburger.

Steaks from the ham (back quarter) make round steaks. Larger roasts also come from the back quarters. Backstraps can be used as tender whole roasts or can be cut into "butterfly" or regular chops. Front quarters and neck meat are best used for chunks or stew meat and a few small steaks. Finally, scraps from the rib cage and rest of the body can be used in sausage or hamburger.

Each butchered meal can be wrapped securely in freezer paper and taped. Then, mark each package with the date taken, sex and name of game species and type of cut. This will enable you to document your legal kill and give you information relative to the quality of taste and future meals.

Cooking game meat is slightly different from beef, pork or regular domestic meats. It tends to be drier because of less animal fat.

There are enough game book recipes around, and every hunter ought to have one in his or her cookbook collection. Game meat is unique and can be served to entertain guests who would like to try, but have never eaten game such as deer, elk, wild hog, javelina, wild turkey, quail and doves.

It also has less cholesterol (depending on what you cook it in or serve with it), and can be eaten by those who are on low-cholesterol diets. Wild game dinners are popular traditions with most sportsmen clubs. Even if you do not hunt, you should attend such a banquet to find out how wild game tastes.

TAXIDERMY

Taxidermy is the art of preserving animals. If you shoot a game species which provided you with a memorable experience or a trophy, you may wish to have it mounted. It might be your first big game animal or a colorful wood duck drake. It might be a trophy and could be close to a record-book animal. It might just be your own special animal. Whatever the reason, a mount will usually last a lifetime and provide you with a conversation piece for friends and visitors.

Taxidermy begins in the field. For big game animals, you need to stop your cuts in back of the shoulder area. From there, skin the animal like a glove until you reach as close to the head as possible. Cut through the neck at that point. The cape around the front legs can be cut in a circle around each leg. This will allow you to detach the cape and head from the rest of the animal. Take the entire head and shoulder cape to a reputable taxidermist. Let him or her work on getting meat off the hides and making shoulder, neck and head cuts. Be careful so you do

BEST COPY AVAILABLE

not make an unnecessary cut in the hide or handle game improperly.

For small game or birds, take the animal as quickly as you can to the taxidermist. If the animal is to be left overnight, freeze it whole inside a plastic bag. Take it to the taxidermist frozen. Note: Taking certain game animals to the taxidermist requires that you get a receipt from the taxidermist containing the name of person who killed the animal, the date the animal was killed and whether it was male or female. (In Texas, this applies mainly for those animals such as deer and antelope requiring evidence of sex. However, it is a good practice to always get all the necessary documentation whether or not it is required by law.)

In most situations it is illegal to sell wild game or their parts. There are some exemptions however. (Please consult a current copy of the Texas hunting regulations for more specific information.) It is usually legal to donate legally taken game to another person or group. Again, you must follow proper, legal procedures as listed in your state's hunting regulations.

OTHER CONSIDERATIONS

BOATING SAFETY

Unlike most people who use boats for pleasure, hunters often use them in the wind, cold and snow and need to take special care to ensure safety. Severe weather makes the hunter's boat ride especially hazardous.

Prepare for the boat trip with the same care that you do for the hunt. Be sure the boat is large enough to carry you and your gear safely. Have throwable safety devices (boat cushions, ring buoys) on board in case someone falls overboard. If wind and water conditions are not safe for boating, change your plans. Taking a risk can result in death. Obey boating laws at all times.

Always wear a **personal flotation device** (PFD) while you're in the boat. Lifejackets will not only keep you afloat, they will also help you keep warm. Your PFD must be Coast Guard-approved. In case of **capsize** or swamping, stay with the boat. Most small boats will float even when upside down or filled with water. If you are stranded in the water, maintain a constant watch around the craft to avoid a collision.

Complete a boater education course. Call Texas Parks and Wildlife, toll free, 1-800-792-1112 or call (512) 389-4999 for information about courses in your area.

Consult an up-to-date, local weather forecast before any boating trip. Leave family or friends a float plan. Telling them where you are going and when you plan to return. Head for shore or shelter at the first sign of a storm. Never operate a boat while using drugs or alcohol.

Boating Safety Rules

1. Always wear a PFD.
2. If the boat capsizes or swamps, stay with the craft.
3. Listen to a weather forecast before going on a boating trip.
4. Tell someone of your trip plans.
5. Go to shore at the first sign of bad weather.
6. Never operate a boat while using drugs or alcohol.
7. Make sure your boat, motor and other equipment are matched and in good working order.

Hypothermia

When there is a danger of hypothermia, the victim must get out of the water quickly. Climb aboard the boat if you have fallen overboard, or climb onto the hull if the boat has overturned. Keep your lifejacket on and get into the Heat Escaping Lessening Posture (H.E.L.P). Do this by drawing your knees up and wrapping your arms around them. If there are three or more victims, you can assume a huddle position. It is important you have the sides of your chests touching in this position.

If you are wearing hip waders or boots, pull your legs up so that air is trapped in the knees. This will help you float if you can't get out of the water.

If possible, do not float with your head in the water. The head is a major source of heat loss. Keep all your clothing on. Even wet clothes can help to keep you warm.

Perhaps most important—remain calm. Positive thinking can save your life.

ALL-TERRAIN VEHICLES

All terrain vehicles or ATVs are vehicles which might be used in conjunction with hunting. They are special purpose vehicles which require a hunter to show care, additional responsibility and good judgment.

If you use ATVs, be sure to properly educate yourself and your family by attending an approved course. Also, be sure the landowner approves use of ATVs in combination with hunting purposes. Follow all safe and ethical uses of ATVs such as staying on the main roads and trails, not driving over crops or planted fields and not hunting from them. If approved by the landowner, use ATVs only to get to an area or haul an animal from the woods.

For more information regarding ATVs, consult your local dealer or ATV Safety Institute representative. In Texas, this person can be contacted at:

Region 3 - Southwest
Southwest Region Administrator
1901 Central Drive #804
Bedford, TX 76021
817/354-9122

DEFINITIONS

PARASITE—organism which lives on or in another animal; usually does not harm the other animal

TRAILING—act of following shot or wounded game (different from tracking)

AGED—breakdown of enzymes in meat usually making it more tender

DOWN (FEATHER)—soft insulative feathers underneath the main feathers of waterfowl

PIN (FEATHER)—brand new feathers which have not expanded to their softer, fluffy state

TAXIDERMY—act of preserving animals in their natural state

PERSONAL FLOATATION DEVICE (PFD)—life preserver; worn to prevent a person from drowning

CAPSIZE—boat turned upside down

ALL-TERRAIN VEHICLES (ATV)—recreational vehicles used for off-road travelling

CHALLENGE—Next time or the first time you go big game hunting, try at least two methods such as stand and still hunting. Be sure to let other hunters know where you plan to be or head so you can avoid shooting in another hunter's direction. Then, think about which method you like better. Which method would be best to harvest an animal?

ASSIGNMENT—Next time you or a family member harvests an animal, field dress, skin and butcher at least part of it. Try a recipe and prepare a meal for your family. Take the animal or part of it from start to finish.

REVIEW/EXERCISES

1. Aldo Leopold classified game species into:

   A. _____

   B. _____

   C. _____

   D. _____

2. List four examples of general hunting techniques and describe each (an example is given).

   Example: Stand hunting - hunting from a tree stand or tower stand.

   A. _____ — _____

   B. _____ — _____

   C. _____ — _____

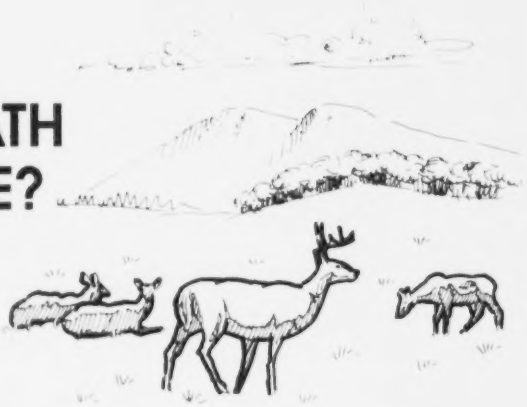
   D. _____ — _____

HELPFUL REFERENCES

Texas Parks & Wildlife magazine — Magazine available through subscription at TPWD, gives up-to-date information about hunting in Texas, seasons, limits, etc.

The Sportsman's Guide to Texas — Dick Bartlett and Joanne Krieger, 1988. Taylor Publishing Company, 1500 W. Mockingbird Lane, Dallas, TX, 75235, gives information, checklists, recipes and advanced methods for hunting all game species in Texas.

WHICH PATH DO I TAKE?



CLOSED HUNTING OPPORTUNITIES

PASSING ON **WRONG** VALUES AND INFORMATION

"MACHO" IMAGE, BRAGGING, COMPETITION, MONEY

POACHING

OPPORTUNISM

UNETHICAL ACTIONS

ILLEGAL ACTIONS

UNSAFE ACTIONS

DEVELOPS POOR ATTITUDE

DOESN'T PRACTICE SKILLS

LACKS KNOWLEDGE

FORGETS EDUCATION

PROMISING FUTURE FOR ALL HUNTERS

TEACHING OTHERS TO BE SAFE, KNOWLEDGEABLE, RESPONSIBLE AND INVOLVED

TOTAL SPORTSMAN — INVOLVED, OBLIGATED, DEDICATED, COOPERATIVE

ETHICAL ACTIONS — COMMITMENT

LEGAL ACTIONS

SAFE ACTIONS

GOOD ATTITUDE

LEARNING — ACQUIRING KNOWLEDGE AND NEW SKILLS

HUNTER EDUCATION

INFLUENCES
Friends
T.V., Videos, Radio
Newspaper
Magazines, books
Parents
Teachers
Relationships

THE CHOICE IS YOURS!

NOTES

LET US HELP YOU PLAN YOUR HUNTING TRIPS. A SUBSCRIPTION TO TEXAS PARKS & WILDLIFE DELIVERS TO YOUR HOME THE LATEST INFORMATION ON ...

SEASONS AND LIMITS

GAME FORECASTS

HUNTING OPPORTUNITIES

PUBLIC HUNTS

SAFETY TIPS

TWELVE 56-PAGE FULL-COLOR ISSUES A YEAR FOR JUST $10 (83¢ AN ISSUE) OR SAVE MONEY BY SUBSCRIBING FOR 2 YEARS (75¢ AN ISSUE) OR 3 YEARS (72¢ AN ISSUE).

SUBSCRIPTIONS MAKE GREAT GIFTS FOR YOUR HUNTING COMPANIONS. JUST COMPLETE, CLIP, AND MAIL THE ORDER FORM PROVIDED ON THIS PAGE.

Order Form:

Please check the correct boxes.

- ❑ I want to subscribe for 1 year at $10 ❑ Foreign $12
- ❑ I want to subscribe for 2 years at $18 ❑ Foreign $21
- ❑ I want to subscribe for 3 years at $26 ❑ Foreign $30
- ❑ I want to give a gift subscription(s).

H002
My Name _____
Address _____
City _____ State ____ Zip _____

H002
Gift Recipient's Name _____
Address _____
City _____ State ____ Zip _____
- ❑ 1 year $10 (includes APO & FPO) ❑ 1 year foreign $12
- ❑ 2 year $18 (includes APO & FPO) ❑ 2 year foreign $21
- ❑ 3 year $26 (includes APO & FPO) ❑ 3 year foreign $30

H002
Gift Recipient's Name _____
Address _____
City _____ State ____ Zip _____
- ❑ 1 year $10 (includes APO & FPO) ❑ 1 year foreign $12
- ❑ 2 year $18 (includes APO & FPO) ❑ 2 year foreign $21
- ❑ 3 year $26 (includes APO & FPO) ❑ 3 year foreign $30

H002
Gift Recipient's Name _____
Address _____
City _____ State ____ Zip _____
- ❑ 1 year $10 (includes APO & FPO) ❑ 1 year foreign $12
- ❑ 2 year $18 (includes APO & FPO) ❑ 2 year foreign $21
- ❑ 3 year $26 (includes APO & FPO) ❑ 3 year foreign $30

❑ Payment Enclosed ❑ Bill Me Later
Be sure to include an address for billing gift subscriptions.

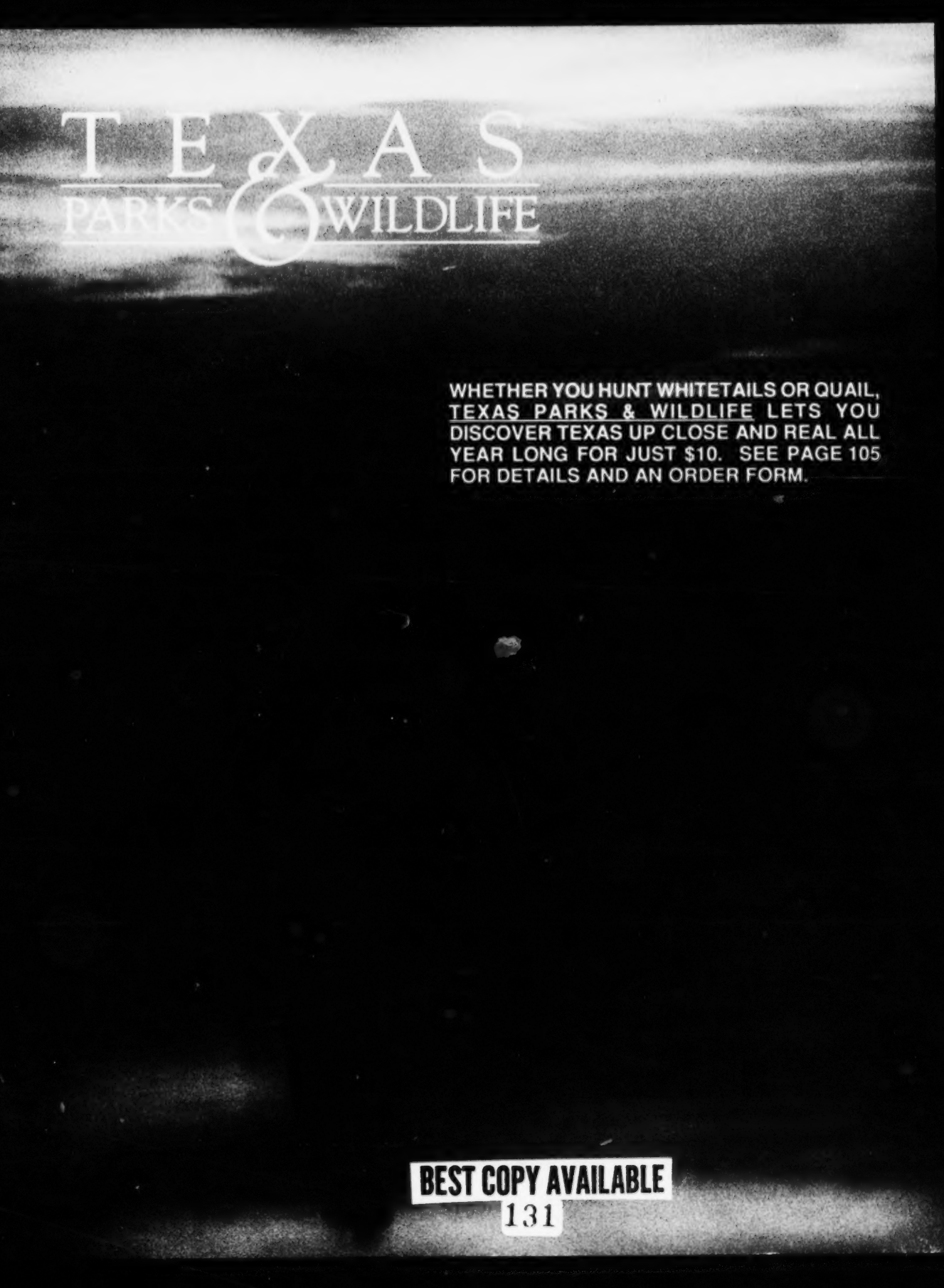
Clip this order form and mail to:
Texas Parks and Wildlife Magazine
4200 Smith School Rd.
Austin, TX 78744

For faster service call toll-free 1-800-792-1112 (Mon.-Fri., 8:00 a.m. - 5:00 p.m.) or call 512/389-4830 or 512/389-4613.
Please allow six weeks for delivery.

BEST COPY AVAILABLE

PWD-BK-9200-138-10/90

Dispersal of this publication conforms with Texas State Documents Depository Law, and it is available at Texas State Publications Clearinghouse and Texas Depository Libraries.



WHETHER YOU HUNT WHITETAILS OR QUAIL, TEXAS PARKS & WILDLIFE LETS YOU DISCOVER TEXAS UP CLOSE AND REAL ALL YEAR LONG FOR JUST $10. SEE PAGE 105 FOR DETAILS AND AN ORDER FORM.

BEST COPY AVAILABLE